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ABSTRACT

This guide, which is aimed primarily at those responsible for providing learning opportunities within further education in England and Wales, deals with managing open learning. Addressed in the individual chapters of the guide are the following topics: the nature of open learning; the production of learning materials; the impact of open learning delivery systems on teachers; procedures for use in accounting for tutorial support, administrative support, and fees and recoupment; management of innovation in open learning; and criteria and methods for appraising the effectiveness and efficiency of open learning. The five appendixes to the guide include information on determining a college's establishment, on calculating unit totals for use in determining teacher salaries, computing student-to-staff ratios, utilizing information technology in open learning, and using the resources of helping agencies in open learning programs. (MN)

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MANAGING OPEN LEARNING

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ABOUT THE AUTHORS

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Jack Latcham graduated in physics and worked for the Admiralty until returning to the London Institute of Education before taking up a teaching appointment. He then served in the Royal Air Force, teaching at the RAF Technical College before being appointed to a series of posts involving the design and implementation of a wide range of courses in electronics and telecommunications. He was involved in several early experiments in programmed learning. He joined the Further Education Staff College specialising in systems and curriculum management. Since retiring from full time service at the staff college Mr Latcham has concentrated upon management information systems and on the development of open learning. He was co-ordinator of the joint CET/FESC Open Learning Systems Information and Consultancy Unit and a member of the FEU Flexible Learning Study Group.

PREFACE

In 1979 the Further Education Staff College (FESC) received a grant from the Council for Educational Technology (CET) 'to survey six colleges currently operating open learning systems in order to provide a factual comparative account of the state of the art'. In August 1980, as part of its open learning systems programme, CET provided funds which established an open learning systems information and consultancy unit at the Staff College. The functions of this unit were to meet requests for information, advice and consultancy and to monitor developments in open learning. FESC was subsequently represented on the CET Open Learning Systems Advisory Panel, the Manpower Services Commission (MSC) Open Tech Task Group, and the Further Education Unit (FEU) Flexible Learning Systems Study Group. Over this same timescale FESC received grants from the FEU to explore **The experience of open learning** (Bagley & Challis 1984) and to collect **Flexible Learning in Action** (Birch & Latcham, 1983). Thus the Staff College has been concerned with open learning for a number of years. Our focus throughout has been on the implications for management, both at college and local authority levels. This publication in the **Management in colleges series** reflects upon what we have learned.

Our thanks are due to all those (too numerous to name) who have shared with us their perceptions of the opportunities and constraints presented by open learning. We have also benefited from the positive criticisms of our colleagues — Bob Challis in particular. The final outcome, with all its inadequacies and blemishes, is however our responsibility alone.

We owe a particular debt of gratitude to secretaries Margaret Lyons and Molly Higgs who have succeeded in deciphering the undecipherable and have kept us, more or less, to our deadlines.

This book is aimed primarily at those responsible for providing learning opportunities within further education in England and Wales: that is, college teachers and managers and local authority officers — but we hope the content will be of interest to a wider audience.

Chapter 1 outlines the nature of open learning. It can be viewed from a number of angles and each perspective could result in a different definition. We have found it most useful to take the view of the student, in which case the extent of 'openness' may be measured by the degrees of freedom offered. The more control the student has over aims, content, process and assessment, the more open the system. The potential for open learning is (at least partly) a function of the nature of the subject and of the nature of the student : not all subjects lend themselves to self-directed study and not all students are able or wish to take advantage of the opportunity even when it is offered. While the trend may be towards giving the student more control, the chances are that there will be a continuing demand for both flexible and conventional learning situations.

Open learning is heavily dependent upon the availability of learning materials. The development of these packages may be costly in terms of both time and

money. A range of possibilities is examined in **Chapter 2**. Many, if not most teachers may wish to be involved directly in writing materials but economies of scale argue for centralised development.

Teachers may or may not be directly involved in materials development but they are most surely important to the effective delivery of the package. Their traditional roles may change, however. How and to what extent is explored in **Chapter 3**.

On the face of it the normal procedures and mechanisms for allocating and controlling resources within further education do not encourage open learning. This presents a challenge for the manager but, we believe, not an insurmountable problem. In **Chapter 4** we explain how open learning may be accommodated within the conventional measurement processes.

Innovation is never easy — not least in education. The introduction of open learning will pose problems for management in most colleges. Thus in **Chapter 5** we consider some of the messages to be found in the literature on the management of change and try to identify factors which ought to be taken into account.

The question of how the effectiveness and efficiency of open learning may be appraised is tackled in **Chapter 6**. Most of the problems are not specific to open learning and the frameworks which are established are of more general application. There is a complexity inherent in education which makes the identification, measurement and matching of inputs and outcomes difficult and, therefore, answers to questions of effectiveness and efficiency must be tentative.

For those who are not familiar with the conventional resource measurements employed in further education, **Appendices A, B** and **C** summarise the procedures for determining a college establishment, calculating Burnham 'points' and deriving the student staff ratio respectively. The future of open learning is considered by many to be closely linked with the application and exploitation of information technology (IT). **Appendix D** outlines some of the issues here. Finally, **Appendix E** lists the agencies which may be able to help those contemplating the development of more flexible learning opportunities and describes briefly the facilities available.

Derek Birch
Jack Latcham
October, 1984

The Nature of Open Learning

> 'Open learning is an imprecise phrase to which a range of meanings can be, and are attached. It eludes definition — but as an inscription to be carried in procession on a banner, gathering adherents and enthusiasm, it has great potential.' (Mackenzie, Postgate & Scupham 1975)

STUDENT AUTONOMY

Despite the fact that 'open learning' is a somewhat emotive phrase which is difficult to define, there have been attempts to capture its essence in a sentence or so. For example:

> 'An open learning system is one which enables individuals to take part in programmes of study of their choice, no matter where they live or whatever their circumstances.' (CET, 1980)

To define 'open' more precisely, it is necessary to consider how learning opportunities may be 'closed'. This is best achieved by coming at the situation as it is perceived by the student and posing the question: 'What degrees of freedom are available?'. The more discretion or control available to the student, the more open (or 'flexible', to use the FEU's preferred and broader word) the system. Thus open (flexible) learning is:

> 'The adaptation of available learning opportunities to meet the needs of the learner in a way that optimises the autonomy of the learner as well as the effectiveness of the process of learning.' (FEU, 1983)

DIMENSIONS AND LEVELS

The nature and extent of student autonomy may be examined on a number of dimensions and at various levels. An increase in openness may be seen as a movement from a situation in which the student has little or no discretion/control towards one in which there is maximum student discretion/control.

Flexible learning opportunities (FEU 1983) identifies the following dimensions:

- aims and content of the learning;
- characteristics and stage of development of the learner (at entry);
- process of learning, including:

mode of learning,
resources for learning,
mode of attendance,
pace of learning,
interaction between learners; and

— method of assessment.

A dimension is nothing more than an aspect on which it is desired to focus attention and doubtless FEU would not claim its list to be exhaustive.

Arrangements for learning are by and large organised around clusters of educational aims under a common set of regulations called **courses** or programmes of study. These courses may usually be broken down into **subjects**, sometimes called modules or units. Even further sub-divisions may be made when comparatively limited objectives are grouped into **lessons** or tasks or projects. To understand fully the nature and extent of openness it may be necessary to examine a situation at all three levels — course, subject and lesson (Spencer 1977).

TYPES

A number of examples of open learning can be found in further education. Some have been reviewed by Davies (1977), Coffey (1978), Spencer (1980), Noble (1981), Twining (1982) and Bagley & Challis (1984). The schemes take different forms. The Council for Educational Technology (CET 1980) classifies them under three headings:

— college-based systems;
— local systems; and
— distant systems.

COLLEGE-BASED SYSTEMS

College-based systems cover those arrangements in which students attend college but are able to study at a time and at a pace of their own choice. The **learning by appointment** centres at St Albans, Bath and Napier colleges are examples. These centres provide a range of learning materials, laboratory and study facilities and access to tutorial help. More specialised are the **flexastudy** arrangements at Redditch College and the **mathematics workshop** at Bradford College. Opportunities for directed private study leading to a variety of business qualifications have been offered at Redditch since 1956. The college provides student-paced programmes based on locally prepared study guides supplemented by tutorial support. Bradford offers a wide range of individualised

learning materials in a special resource area. This workshop includes diagnostic testing facilities and ready access to tutors. Originally conceived as a remedial facility in basic numeracy, the workshop now provides support in mathematics to otherwise conventional courses. **Tutor teach** has now been established. This scheme provides 'O' and 'A'-level courses in mathematics entirely through the medium of individualised learning materials and is operated within the mathematics workshop.

LOCAL SYSTEMS

Most students in local systems live within easy travelling distance of the college but spend most of their study time at home. Learning is based on a written package (mostly 'bought-in'); the college provides guidance, counselling, a mark and comment service on assignments, tutorials and access to the library and other college facilities. The best developed of these arrangements is **FlexiStudy**. Pioneered at Barnet College in 1977, it has since been adopted by more than 100 other colleges. FlexiStudy is described in detail in NEC (1980).

DISTANT SYSTEMS

Most students in distant systems live a long way from the college and, in effect, pursue correspondence courses. However, the provision may be supported by counselling and include periods of residential study. Examples are the Doncaster Metropolitan Institute of Higher Education assisted private study course leading to the membership examinations of the Institute of Quarrying, the Polytechnic of the South Bank scheme leading to the Institute of Corrosion Science and Technology examinations, and the Scottish Business Education Council sponsored scheme leading to SCOTBEC awards for people living in the Highlands and Islands remote from any college.

SELF-STUDY OPTIONS

An example of a scheme which does not fit neatly into the CET classification is British Telecommunications self-study option for telecommunications engineers working for a B/TEC award. The courses are for the most part based on correspondence learning but provide access to local colleges for practical work and tutorial help. Where a suitable college cannot be found, British Telecommunications provides tutors and study facilities directly. It also undertakes overall control and co-ordination, produces the learning materials and provides pre-enrolment counselling. The colleges provide tutorials, offer facilities for practical work and administer assessments. This particular scheme may provide a model for some of the Open Tech projects.

COMMON CHARACTERISTICS

The common characteristics in all the schemes seem to be that they:

- provide students with especially prepared materials for private study;
- provide a mark and comment service for the students' written work (tutor-marked assignments in Open University jargon); and
- provide some guidance, counselling and tutorial support.

Many of the schemes are open only in the sense that the student has some control over where and when to study and the pace of learning. They leave untouched other possible areas of openness such as aims and content, entry requirements and assessment. Indeed it is possible to discover more student autonomy on more dimensions in (apparently) more conventional courses. (See for example the Portsmouth Case in Birch and Latcham 1983).

SOME IMPLICATIONS FOR TEACHERS

A movement towards greater openness will almost certainly make the job of a teacher more complex. New skills have to be acquired and higher risks accepted. The teacher may need to:

- negotiate with the student and accept some erosion of control;
- move from being a lecturer towards being facilitator and consultant;
- become skilled in diagnostic testing, guidance and counselling;
- work within a team and more publicly;
- develop learning materials and resources; and
- use learning materials and resources produced by others.

Bagley and Challis discuss some of these issues. They suggest that for many teachers the increased complexity and uncertainty are often outweighed by greater job satisfaction. The introduction of open learning certainly needs to be accompanied by an investment in staff development. A number of publications offer guidance on writing self study materials and tutoring in an open learning scheme. Some of the most readable and practical have been produced by Roger Lewis (1981a, 1981b, 1981c).

SOME IMPLICATIONS FOR MANAGERS

Innovation is never easy. It is possible that if folk thought through all the possible difficulties and problems likely to be thrown up by a radical change, they would never begin. It may well be that the important thing to do is to start and then keep going. The momentum of an innovation may be maintained for a time by the

energy and enthusiasm of the self-selected and committed. At some point, however, an innovation requires to be legitimised, formalised and 'sold' to the more sceptical. Thus, sooner or later, a significant movement towards open learning will require management to:

- select and deploy staff and arrange for the necessary staff development programme;
- agree the basis on which the scheme will be resourced, monitored and evaluated and devise and implement the appropriate administrative systems and procedures to support this accounting;
- provide the necessary accommodation, materials and equipment and arrange for adequate support services; and
- consider if, and how far, the organisational structure needs to be adapted and persuade the staff to adopt and to operate the change (if any).

An increase in student autonomy does not of itself guarantee **effective** learning. Student discretion needs to be operated through a process of negotiation which is supported by counselling and guidance. It is probable that the choices which emerge will create a demand for both conventional (i.e. teacher controlled) and radical (i.e. student-determined) learning situations. The managerial structures, procedures and criteria which facilitate one situation may not be appropriate for another. Increasing openness may thus result in a college which is more complex and in which the normal uncertainties, ambiguities and tensions are increased. This price should be acceptable if the outcomes are a significant increase in the quantity and quality of learning.

The Production of Learning Materials

The ready availability of individualised learning materials is critical to the development of more flexible learning opportunities. Lack of resources for producing materials has been one of the reasons open learning has not been more widely adopted by further education.

Much of the recent increase in open learning activity has been based on commercially produced packages. FlexiStudy, for example, has relied mainly on materials from the National Extension College. By and large the materials produced by correspondence colleges are geared to 'O' and 'A' level and business professional studies (Glatter and Weddell [illegible]1). The largest investment in materials for technician training has probably been made by British Telecommunications. While intended primarily for their own trainees, the British Telecommunications packages are available [illegible]ale to colleges.

A few schemes have been based on college produ[illegible]aterials (the Doncaster assisted private study course for quarry managers for instance); one of the objectives of the recently formed Open Learning Federation is to foster the development and sharing of mat[illegible]rials by colleges. The work within colleges has generally been 'self financed' although in a few cases there has been some external funding — the BEC support for the national certificate (B3) materials at St Johns, Manchester, is an example.

THE OPEN TECH PROGRAMME

The Open Tech Programme was launched by the MSC is 1983 and funded, initially for a four-year period, with an annual budget rising to about £16m.

> 'The programme is focussed initially on the education, training, retraining and updating of adults in technician and supervisory levels of skill and knowledge in order to meet identified labour market needs and to assist personal development and aspirations.' (MSC 1982)

Since Open Tech funds are intended to pump-prime development work, there is some hope that the Open Tech will have a significant impact on the production of learning packages. If it achieves nothing else the programme is likely to provide a stock of experience and expertise in materials development which should benefit further education generally.

SOME QUESTIONS

When considering the resource implications of materials development a number of questions spring to mind:

- How much material is already available in a form in which it can be used directly or after minor modification?
- How significant are the costs of tracing, evaluating, categorising and marketing these existing materials?
- How significant are the costs of *ab initio* development of purpose-designed materials?
- What are the economies of scale in such enterprises and how can these economies be exploited?

We do not have enough data from further education to begin to answer any of these questions rigorously. It might be argued at this stage that the jobs which need to be done will cost as much as the providers of resources allow them to cost i.e. the game is budgeting rather than costing. As the Open Tech Programme proceeds, evidence on costs and cost effectiveness will undoubtedly emerge. Meanwhile we can only speculate on the parameters which are likely to be significant.

THE WORKLOAD

Learning materials range from annotated reading lists through to the highly professional, multi-media productions of the Open University. It follows that the investment in writing and production also varies enormously. Nevertheless, in most cases the development of a study unit will involve:

- identifying the students and their characteristics;
- considering the structure of the rest of the course and the nature of the tutorial support;
- defining what is to be learned;
- choosing content and sequence, devising assessment and selecting media;
- writing, editing, piloting and validating the material;
- printing, producing, packaging and marketing the product, and
- monitoring, evaluating, debugging, modifying and updating the outcome.

Most of these tasks are those normally associated with any curriculum development: none of them can be considered to be trivial. The open learning student is often divorced from the support enjoyed by the student on a conventional course. The learning materials are the major medium of instruction and communication. If the package has been ill-conceived, hastily prepared and

poorly packaged, the chances of success are not high (Manwaring 1982, Fyfe 1982).

AN OPEN UNIVERSITY EXAMPLE

Figure 1 is an activity chart for the production of an Open University science unit in a typical half-credit post-foundation course. It is taken from a paper by Pentz (1974) which reflects on the first five years of course production experience in the science faculty. There are 16 units in a half credit course and each unit comprises a set of learning activities which it is expected will occupy the **average** student for about 12 hours. The figure in the bottom right hand corner of each box represents the best estimate of man-days required for that activity.

Four distinct phases of course production are identified:

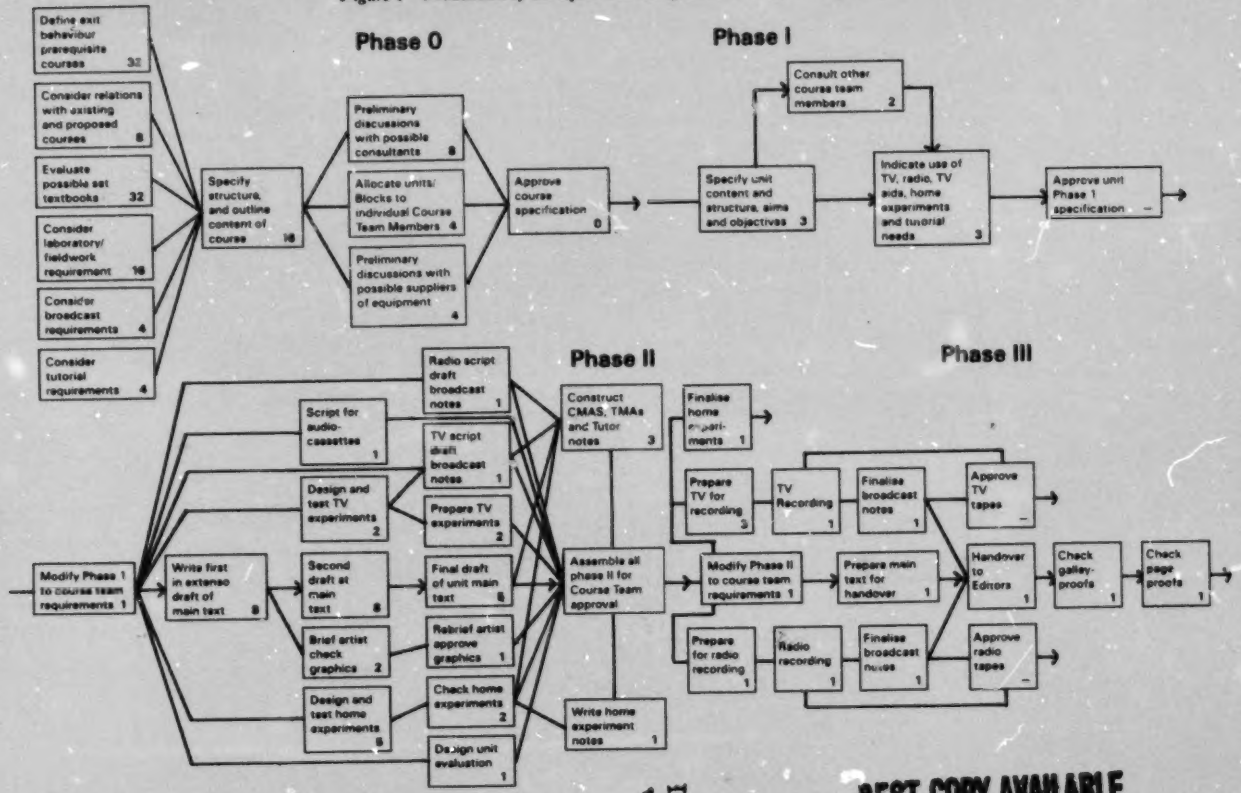
- **Phase Zero** is the basic **course** design phase. For a 16- unit post-foundation course, the activities included in this phase are expected to take 128 man-days or eight man-days per unit.
- **Phase One** is concerned with the **basic** design for each unit. Estimated time per unit is eight man-days.
- **Phase Two** covers the **detailed** preparation of each unit. The main text is processed through three drafts and the preliminary work is done on TV, graphics and home experiments. Estimated time for these activities is 44 man-days.
- **Phase Three** is the final production phase. TV and radio programmes are recorded and all print material is handed over to the editor and thence to the printer. The estimated time for this phase is 14 man-days.

In addition to the four phases there is a series of parallel activities, some of which are related directly to units and others to the production of the course as a whole. They include:

- reading and commenting upon other units in the course;
- consulting other course team members;
- writing the 'Introduction and guide to the course';
- producing supplementary course material — data books, handbooks on experimental procedures;
- designing the summer school programme; and
- devising examination questions and other **course** assessments.

In the typical case these tasks account for a further 272 man-days for a 16-unit course or 17 man-days per unit.

Figure 1 Production of an Open University Science Unit activity chart


Phase 0
Phase I
Phase II
Phase III
Define exit behaviour prerequisite courses 32
Consider relations with existing and proposed courses 8
Evaluate possible set textbooks 32
Consider laboratory/ fieldwork requirement 16
Consider broadcast requirements 4
Consider tutorial requirements 4
Specify structure and outline content of course 16
Preliminary discussions with possible consultants 8
Allocate units/ Blocks to individual Course Team Members 4
Preliminary discussions with possible suppliers of equipment 4
Approve course specification 0
Consult other course team members 2
Specify unit content and structure, aims and objectives 3
Indicate use of TV, radio, TV aids, home experiments and tutorial needs 3
Approve unit Phase 1 specification –
Modify Phase 1 to course team requirements 1
Write first in extenso draft of main text 8
Radio script draft broadcast notes 1
Script for audio-cassettes 1
TV script draft broadcast notes 1
Design and test TV experiments 2
Prepare TV experiments 2
Second draft of main text 8
Final draft of unit main text 8
Brief artist check graphics 2
Rebrief artist approve graphics 1
Design and test home experiments 8
Check home experiments 2
Design unit evaluation 1
Construct CMAS, TMAs and Tutor notes 3
Assemble all phase II for Course Team approval
Write home experiment notes 1
Finalise home experiments 1
Prepare TV for recording 3
TV Recording 1
Finalise broadcast notes 1
Approve TV tapes –
Modify Phase II to course team requirements 1
Prepare main text for handover 1
Handover to Editors 1
Check galley-proofs 1
Check page proofs 1
Prepare for radio recording 1
Radio recording 1
Finalise broadcast notes 1
Approve radio tapes –

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The man-days required for a unit are thus:

Phase	Man-days
0	8
1	8
2	44
3	14
Parallel activities	17
	Total 91

'Taking variations and errors in estimation into account, we are inclined to call this 90 plus or minus 20 man-days' (Pentz 1974). This example illustrates the activities involved in bringing a unit to the point of marketing. It does not include the subsequent monitoring, updating and maintenance of the product.

The Open University manpower budgets outlined above are set at about 90 man-days for a 12-hour unit or seven-and-a-half man-days for one hour of student learning activity. It might be argued that the Open University is an inappropriate exemplar for further education. We are in a different business and, perhaps, we should look for more modest analogues. For example, in North America where writing learning materials is a more common teaching task, it is not unusual to allow one man-day to produce one hour of learning activity. However, many of the materials thus produced are intended for internal college use only. The British Armed Forces and British Telecommunications suggest that the manpower required may be nearer to four man-days. Even in this case the allowance is below that apparently worked by the Open University.

The **rigorous** production of learning materials which are intended for use by students working at a distance will involve many of the activities identified in Figure 1 and may well require a similar investment in manpower. Before this possibility is dismissed out of hand as too expensive, it is worth noting that there may be a trade off between the investment in the production of materials and the investment in tutorial support.

DEVELOPMENT COSTS

Consider the development of a B/TEC unit involving, say, a nominal 60 hours of student learning activity. As explained above the academic staff manpower budget to develop this package might range from 60 man-days (at one man-day per hour of learning activity) to 450 man-days (at seven and-a-half man-days per hour of learning activity). The relationship between academic staff and all other costs in further education is about 65/35. The design and development of learning materials would probably involve a higher proportion of 'other' to academic staff costs. Let us suppose the relationship was more of the order of

50/50. Making this and other assumptions results in development budgets ranging from £9000 to £65,000 for a 60-hour unit. (See Table 1.)

Table 1

The development of a 60-hour unit: a range of possible costs/budgets

Assumptions:

— Average academic staff salary cost (including national insurance and superannuation) is *£13,739 *per annum*

— Average academic staff availability is 38 weeks x 5 days = 190 man-days**

— The ratio of academic staff costs to administrative, technician and other support and oncosts is one to one.

Academic staff required:

At one man-day per hour:	**At four man-days per hour:**	**At seven and-a-half man-days per hour:**
60 man-days	240 man-days	450 man-days
Academic staff cost:		
60/190 × £13,739 = £4,339	240/190 × £13,739 = £17,355	450/190 × £13,739 = £32,540
Administrative, technician and other costs:		
£4,339	£17,355	£32,540
Total development costs:		
£8,678	£34,710	£65,080

Note:
* This figure was obtained from the DES and is derived from the 1983 SSR survey.
** This calculation reflects current conditions of service agreements.

The development cost is a fixed cost and becomes insignificant if it is spread over a sufficient student throughput. For example, if we assume a five-year life, the *per capita* cost is £130 with a student enrolment of 100 *per annum* and only £13 with a student enrolment of 1000 *per annum* for an academic manpower budget based on seven-and-a-half man-days to produce one hour of student learning activity. (See Table 2). In all cases the *per capita* costs are sensitive to:

— the estimate of the life of the materials; and

— the forecast of students throughout *per annum*.

Table 2

Per capita development costs for a 60-hour unit at various levels of student enrolment

Assume: five-year life

Academic staff budget:	60 man-days	240 man-days	450 man-days
Development cost (See Table 1)	£8,678	£34,710	£65,080
	Per capita costs: £		
Student enrolment p.a.			
100	17.36	69.42	130.16
200	8.68	34.71	65.08
500	3.47	13.88	26.03
1000	1.74	6.94	13.02

Development costs should take account of at least a first stage of pilot operation or other form of validation. It should also be recognized that errors and ambiguities are likely to persist even after the preliminary validation. The organization of print runs should allow for a stage of amendment following fairly closely on the initial launch. Development costs should include provision for the academic and support effort involved in the 'debugging' as well as the piloting of the package.

Thereafter there exists a range of possibilities in regard to the maintenance or replacement of the package. The useful life of learning materials is (in part) a function of the quality of the original design and development work and of the rate of technological change in the subject matter: the better the quality and the lower the rate of technological change, the longer the life.

The *per capita* calculations of Table 2 carry the implication that a materials pricing mechanism will seek to recover the initial costs from a projected population over an assumed lifespan. It would be reasonable to assume that a re-written package could be produced for something like the original cost, in real terms (i.e. with appropriate allowances for inflation) a package costing **x** designed for a life of **n** years would be written off at an annual rate of **x/n**. An alternative approach might provide from the outset for a continuing investment in updating and renewal. This would be economically justified as long as the real cost of the annual investment was no greater than **x/n**.

So far as student enrolments are concerned the forecast will be a function of the specificity of the materials: the more specific the materials, the lower the expected student throughput. For example, an examination of the **Standard Unit Reports** (1982) of the TEC Research, Development and Monitoring Section reveals an average enrolment of 2247 across 43 standard units. It would not be unrealistic to expect to obtain 10 per cent of this market. So a forecast of 200 student enrolments *per annum* for a B/TEC standard unit might be

reasonable. The market for a **non**-standard unit would however be significantly lower.

In some circumstances it may be necessary to approach the question of 'How much?' from a different direction. So far our speculations have been based on identifying the tasks involved and trying to indicate the manpower required for each activity. The alternative is to forecast the annual student throughput and then pose the question, 'How much will this market bear?' For example, suppose the forecast of enrolments was 50 *per annum* and the 'guestimate' of an 'acceptable' price for a 60-hour unit was £10. Then, staying with the five year life assumption, the funds which would be generated to recover development costs would be £2,500. The production of the necessary materials may appear to be feasible within this budget. If not, each forecast and each assumption and, indeed, the project, will need to be reconsidered.

ECONOMIES OF SCALE

It is reasonable to suppose that there are economies of scale to be derived from a central direction of the development, production and marketing of learning materials. These economies would include:

- the more efficient use of professional and technical expertise;
- quality control advantages;
- longer print-runs with lower print and packaging costs per copy; and
- the ability to subsidise materials aimed at small but important markets from the 'surpluses' generated by popular packages.

The Further Education Staff College (FESC 1981) has argued that the Open Tech Unit should focus its resources on pump-priming the development of learning materials and that these developments would be most economically arranged on a national or regional consortium basis. This seems to be happening. If so, it will leave most colleges free to concentrate upon the provision of guidance, counselling and tutorial support and laboratory and workshop 'hands on' experience.

Delivery Systems: The Impact on the Teacher

> 'The thing which a live tutor can do which we can't mechanize and we can't mass produce, is to enter into a dialogue with students.' (Perraton 1974.)

In the previous chapter we considered the development of learning materials and concluded that this work might be most economically arranged on a national or regional consortium basis. The majority of lecturers concerned with open learning would then provide counselling and tutorial support rather than writing and producing learning materials. We now turn to the question of delivery systems and explore how the roles of the lecturer may be modified with open learning.

THE TEACHER'S TASKS

Traditionally the tasks of a teacher include:

- defining aims,
- organising learning material,
- presenting this material, and
- assessing and examining.

Not all these tasks are carried out in the classroom. This is recognized by the conditions of service agreements which generally postulate a 30-hour per week availability and then identify maximum class contact hours per week for each grade of staff. The difference between the 30 hours' availability and the maximum class contact hours is presumed to be for marking, preparation and other duties. Most of the academic staff planning and control measures currently in use are based on counts of class contact hours. Hence, teacher class contact hours are a commonly employed proxy for assessing teachers' workloads. This presents a problem when we consider how to account for the tutorial support of open learning. We shall return to this question.

Whether the teacher is involved with open learning or is concerned solely with conventional programmes, the teaching tasks identified above remain. The emphasis within this mix of activities may change however. For example, the

open learning tutor using, say, a set of study notes produced by the National Extension College is likely to spend less time preparing and presenting the learning material and more time counselling and providing a mark and comment service on written assignments. We have suggested elsewhere (Birch & Latcham 1983) that a movement towards more student autonomy (i.e. more 'flexibility = openness') may require the teacher to be willing to:

- negotiate with the student (and others) the aims, content, processes and assessment of learning;
- become skilled in diagnostic testing, guidance and counselling;
- develop learning materials and resources;
- use the learning materials and resources developed by others;
- work more publicly and more within a team; and
- move away from 'lecturer' towards 'consultant' and 'facilitator'.

Some teachers may be operating in this mode already. For other teachers the change in emphasis in roles and skills may represent a radical shift towards a much higher risk situation (Bagley & Challis 1984).

The particular impact of open learning will vary from scheme to scheme, from student to student and from teacher to teacher. However, in attempting to identify the possible effects it is convenient to first consider, in turn, (CET 1980)

- 'local systems',
- 'distant systems', and
- 'college systems'

although many of the features, so far as they affect teachers, are common to most schemes.

LOCAL SYSTEMS

The most frequently encountered example of a 'local system' in further education is **FlexiStudy**. There are currently well over 100 colleges and in excess of 10,000 students engaged in FlexiStudy. The working of a large scheme is described in **Barnet College of Further Education: FlexiStudy — A manual for local colleges** (NEC 1980).

In 'local systems' most of the students live within travelling distance of the college but spend most of their study time at home. Their learning is usually based on commercially produced correspondence course materials. The college provides tutorial support and access to its facilities — libraries, laboratories and workshops. The tutorial support may involve some or all of the following:

- initial guidance;
- assignment marking;
- group seminars, individual tutorials and telephone conversations;
- in-course counselling, 'chasing' and record keeping; and
- arranging and supervising practical work.

Decisions on how to distribute the available time between these various activities are usually left to the tutor.

Initial guidance validates the choice of course and ensures that the student understands the peculiar demands of working substantially alone. Not all students are suited to this form of study and some may be better advised to pursue more conventional programmes. The student's commitment to some timetable of work and submission of assignments is important. The negotiation of this 'contract' provides the student with a framework and a discipline for study. The contract also acts as a prompt to the tutor for subsequent follow-up action. As the study proceeds the contract can be amended as circumstances dictate. Because of the special diagnostic and negotiating skills required, it may be that initial guidance is most effectively provided by staff who have been specially selected and trained for the purpose. At Barnet, for example, the FlexiStudy co-ordinators undertake the initial guidance and are allowed remission of class contact at a rate which is negotiated from time to time but approximates to one hour per 50 **enrolled** students for this task. The interviews average 30 minutes per applicant and not all applicants become enrolments.

The major channel of communication between student and teacher is probably the marking of assignments. For this reason Lewis (1981b) stresses the importance of marking student work carefully to provide sufficient comment, positive criticism and encouragement. He also emphasises the importance of a prompt response and recommends the use of first class post (Lewis 1980). Lewis and Tomlinson (1977) provide examples of student-tutor exchanges.

The amount of time available for tutorials, counselling and other activities tends to be a function of the time remaining **after** marking. A small case load results in a small residual non-marking time and this limits the scope for other support. A larger case load permits a more varied and flexible response. A numerical example will illustrate this. Suppose that a tutor supervises six students and is allowed a total of 10 minutes per student per week to cope with this case load. Suppose further that over a 12-week term the six students each submit three assignments and that each assignment takes 20 minutes to mark. Table 3 shows that in this case there are six hours available over the term for all other activities. The tutor might decide to hold two one-hour group seminars and leave the balance of time for responding to telephone enquiries, recording, chasing and counselling. The tutor with 60 students spends the same proportion of time marking but the balance of 60 hours in the term (i.e. five hours per week) is sufficiently large to allow for a variety of organized activities and for a degree of flexibility in informal exchanges.

Table 3

Distribution of tutor time over a 12-week term for various case loads

For SIX students	
Total time available	: 6 students × 10/60 hours × 12 weeks = 12 hours
Marking time	: 6 students × 3 assignments × 20/60 hours = 6 hours
Time for other activities	: 6 hours
For SIXTY students	
Total time available	: 600 students × 10/60 hours × 12 weeks = 120 hours
Marking time	: 60 students × 3 assignments × 20/60 hours = 60 hours
Time for other activities	: 60 hours

In all systems — 'distant' and 'college' as well as 'local' — there is a dependence on learning materials. In many cases the materials will not have been produced by the tutor. Losing control of content and presentation will be resented by some. They may feel isolated from the 'real' academic action. 'Part time tutors and the students face similar problems as fellow travellers on the outside rim of the Open University wheel' (Harrison 1974). However, Harrison goes on to underline the importance of the tutor's position at the interface between the student's peculiar needs and the centrally produced course. For it is here that the material can be adapted to meet the student's local concerns and a bridge can be built between 'popular culture' and 'educated knowledge'.

It is possible that open learning, with its emphasis on one-to-one contacts, leads to a much closer relationship between tutor and student than is the case in traditional teaching. This relationship may spill over from professional concerns with subject content and learning difficulties into personal concerns. Tutoring is not the same as class teaching and it may be more difficult for a tutor to maintain distance (Bagley & Challis 1984).

Because there is no regular pattern of attendance a record of transactions with the student becomes particularly important. This 'client file' is the prompt for 'chasing' as well as containing the 'normal' data associated with a student record. Ideally it would include:

- details of the learning contract as negotiated at the initial guidance stage and subsequently updated;
- copies of correspondence and outline summaries of telephone and other oral exchanges;
- a record of assignment marks, attendance at tutorials, examinations sat and the results.

It is important for management to be able to establish at any time whether a student is active or withdrawn either temporarily or permanently. This information is required to plan and monitor resource allocation. However, the pressure to establish whether students are 'alive' or 'dead' or merely 'sleeping' may be seen by some tutors as intensifying the 'delicacy' of their relationship with their students (Bagley & Chailis 1984).

It is evident that open learning schemes (and not just 'local systems') require a higher level of administrative support than is normally provided for conventional courses. Easy access to a telephone, a reliable system for ensuring the delivery of messages from students, adequate secretarial assistance for typing and filing — all these take on a larger significance in open learning. They are matters for management to consider and we return to them in the following chapters.

Some study programmes — particularly technology and science-based programmes — will involve practical and 'hands-on' experience. How best to arrange for this? There are a number of possibilities, including:

- the provision of 'home-kits';
- allowing open learning students to join in conventional practical classes;
- arranging 'special' laboratory and workshop sessions or 'drop-in' facilities for open learning students.

The home-kit solution is related to the question of the development of learning materials. The development cost may be high but if there are sufficient students — nationally or regionally — the *per capita* cost may be acceptable. This solution meets the need of the student not to be tied to attendance at a particular time in a particular place. Allowing students to join normal timetabled laboratories and workshops appears to be the least costly solution, but it has the serious disadvantage of constraining students to attend and to study at the pace and in the sequence determined by the conventional programme. Arranging drop-in facilities may give more flexibility with regard to attendance, pace and sequence but it raises the problems of instruction and supervision and of arranging for equipment to be available on demand. Colleges which are also operating 'college systems' (see below) may be better placed to cope.

DISTANT SYSTEMS

The essential feature of a 'distant' scheme is that most of the students are remote from the college and, in effect, pursue correspondence courses. One of the most widely reported examples in further education is the Doncaster Metropolitan Institute of Higher Education assisted private study (DAPS) course leading to the examinations of the Institute of Quarrying (Davies 1977, Spencer 1980 and Birch & Cuthbert 1981).

Many of the features of 'local systems' as they affect teachers also apply to 'distant systems'. However, the staff involved in 'distant systems' are much more likely to be concerned with the writing and production of learning materials

and, as a result, their commitment to open learning may account for a much higher proportion of their working week. This degree of specialisation is rarely found in 'local systems' where the teacher's workload usually embraces both open learning and conventional programmes. Focus facilititates the development of expertise. It is also possible to argue the 'special case' for a unit concerned almost exclusively with open learning. Adequate clerical and other support may consequently be more easily obtained and appropriate administrative procedures and accounting measures more quickly developed.

The importance of the 'mark and comment' service as the major channel of communication between tutor and student is re-emphasised in distant systems. The possibilities for providing supplementary support are limited. One-to-one telephone contacts are possible; telephone conferencing (CET 1983) for group work is advocated in some cases (Turok 1977). But these arrangements may require students to keep pace and to attend at specified times and places where equipment is available. The summer school concept, pioneered by the Open University, has been adopted in the DAPS scheme which provides four residential weekends in each year of the three-year course. The weekends give opportunities for personal counselling, remedial work, the reinforcement and extension of correspondence topics, and laboratory work. The residential period seems to be one of the more practical solutions to the problem of giving 'distant' students the opportunity to relate to their tutors and to each other. However, Woodley and McIntosh (1977) report that a quarter of those who decide not to apply to the Open University do so because they could not have attended summer school.

Maximum flexibility in planning study time is a major reason for students enrolling on an open learning programme. It is almost inevitable, however, that at some points the system will impose constraints of time and geography on the student. The use of certain media may impose constraints. Bates (1975) shows, for example, that only with twice weekly broadcasts (at different times of day) is it even theoretically possible for more than 90 per cent of students to view or hear them. Interaction between student and tutor and student and student will almost always involve being at a particular place at a particular time and, sometimes, also to have arrived at a particular point in the course. Despite the inconvenience, interaction can temper the otherwise authoritarian style of remotely produced learning materials, motivate the students to persevere and provide them with the discipline needed to complete the course. However, interactive activities for 'distant' students are expensive and the effectiveness of such provision needs to be examined regularly.

COLLEGE SYSTEMS

'College systems' cover those arrangements where the students attend and work mostly in college. In 'local' and 'distant systems' the students work largely outside college. There is a variety of 'college systems' to be found in further

education ranging from the 'learning-by-appointment' centres to the project-based workshops often found in art and design education. (See the Portsmouth case study, Birch & Latcham 1983). One of the more widely reported examples of a 'college system' is the Bradford mathematics workshop (Spencer 1980 and Bagley & Challis 1984).

The common feature of 'college systems' is that the learning is substantially materials-based and more student-determined than in conventional courses. In the more radical examples the student may have some control over aims and assessment as well as the processes of learning, such as sequence and pace. In most cases the student will have ready access to individualised learning packages and may call for tutorial support as and when required. In some cases they may be able to obtain testing and assessment on demand.

Of the many varieties of 'college system' the Bradford mathematics workshop contains features which may be of the most general application. The workshop has a full time manager who is concerned with acquiring and maintaining materials, tutoring and administration. The unit is housed in extensive accommodation which includes a room with seating for about 100 students, smaller rooms for diagnostic testing and tutorials, offices and a coffee room. The materials, which have been gathered from a wide range of external sources as well as college produced, are stored and catalogued in the main room. The workshop is open from 0900 to 2100 hours Monday to Thursday and from 0930 to 1630 on Friday.

Originally conceived as a remedial facility in basic numeracy, the workshop now provides 'drop-in' facilities and supplementary support to a wide range of otherwise conventional courses.

'Tutor Teach' has now been established. This scheme conducts full and part time 'O' and 'A' level courses in mathematics entirely through the medium of individualised learning materials and is operated totally within the mathematics workshop. Some indication of the range of students using the facility is given in Table 4. Another factor in judging the use of the workshop is the time each student spends there. An observation of TEC students over a period from April to May 1982 revealed times ranging from 30 minutes to 5.5 hours. The use that Tutor Teach students make of the workshop is individually negotiated and varies according to whether the course is 'O' or 'A' level and whether the student is full time or part time. Minimum times typically range from two hours per week for part time 'O' level to six hours per week for full time 'A' level (Bagley & Challis 1984).

Apart from the workshop manager, in 1982/83 only one other member of the academic staff was employed full time in the workshop. Tutorial support was provided either by part time teachers or by full time teachers timetabled into the workshop for part of their total class contact. How to plan and account for the allocation of staff to an operation like the Bradford mathematics workshop is a problem we will return to in Chapter 4.

Some teachers involved in the workshop may be concerned with diagnostic testing and guidance; some may be involved with the preparation, maintenance and enrichment of learning materials; but the major task for most is to be

Table 4

Numbers of students using Bradford mathematics workshop

Tutor-Teach enrolments 1981/82	Total
'A' level: full time 70 part time 110:	180
'O' level: full time 98 part time 388:	486
	666
Other students using workshop April to May 1982	
TEC	388
BEC	20
CGLI Craft/Technicians	44
Pre-nursing	41
Computer studies	19
Mature students	98
Miscellaneous	18
Total	728

Derived from Bagley & Challis (1984).

available to students. The tutors do not know what they may encounter when they offer assistance. They may not have the 'answer' and will need to confer with, or refer the student to, a colleague. Compared to the prepared lesson delivered in the privacy of the classroom, the workshop is relatively insecure and public. The workshop tutor has to come to terms with this uncertainty and be prepared to accept the role of 'facilitator' and to work more openly within a team.

CONDITIONS OF SERVICE: WHAT THE TUTOR NEEDS TO KNOW

We believe that the majority of teachers involved in open learning will be primarily concerned with the delivery of the system rather than in writing and producing materials. How can this tutorial support be accounted for?

Current conditions of service agreements in further education allow for teachers to be 'available' for 30 hours per week for 38 weeks per year. They then identify maximum class contact hours per week over a teaching year of 36 weeks for each grade of staff. The maximum class contact hours are locally negotiated but they usually fall within the following bands:

Lecturer I	:	20-22 hours
Lecturer II	:	17-20 hours
Senior Lecturer	:	15-18 hours
Principal Lecturer	:	13-16 hours

Each lecturer (tutor) can be thought of as a resource devoted to several kinds of task:

- class contact;
- preparation and marking directly related to this class contact: and
- other duties not directly related to this class contact but with general departmental or college duties such as course administration and curriculum design and development.

Existing conditions of service simply define the maximum class contact: they provide no guidance on the disposal of the balance between the class contact and the 30 hours per week 'availability'. there is however, an expectation that, for a Lecturer I, the balance would be concerned primarily with preparation and marking. Thus for a Lecturer I with 20 hours per week class contact we might assume 10 hours of preparation and marking. It can be argued that this preparation and marking factor of about 30 minutes for every class contact hour attaches to all grades of staff. If so, a pattern similar to that set out in Table 5 emerges. It may be necessary to negotiate locally the basis on which non-class contact time may be associated with open learning.

Table 5

Possible distribution of lecturer time: Class contact, preparation marking and other duties

	Class contact hours/week	Preparation and marking hours/week	'Other' duties hours/week
Lecturer I	20	10	0
Lecturer II	17	8.5	4.5
Senior Lecturer	15	7.5	7.5
Principal Lecturer	13	6.5	10.5

In the case of most 'college' systems, such as the Bradford mathematics workshop, the normal conditions of service may not require significant amendment or reinterpretation. So far as the tutor is concerned, being timetabled to provide support in a workshop may be seen as no different from being timetabled into a normal class. If so, preparation and marking time associated with this class contact may also be considered to be available to the workshop. For a Lecturer I with, say, a maximum class contact of 20 hours per week, this extra time is 10 hours per week. So that if this lecturer were timetabled into the workshop for five hours' 'class contact' per week, he or she would be 'available' to the workshop for a further 2.5 hours for some purpose in support of the workshop.

In the case of 'local' or 'distant' systems, open learning may involve the tutor in very little or no timetabled face-to-face class contact, in which case normal

conditions of service will require reinterpretation. The crucial factors determining the open learning workload are the number of students to be supervised and the time allowed for the supervision of each student. Because most tutors will be operating a timetable which combines conventional class contact with open learning supervision, it is convenient to express the open learning supervision in terms of a 'credit' of class contact. In most cases a tutor's open learning workload can be fully described by:

- the caseload (i.e. the total number of open learning students assigned to the tutor for supervision);
- the class contact credit; and
- the number of weeks for which the caseload is to be supervised.

How these factors may be determined and how they fit into the normal resourcing and control procedures is explained more fully in the next chapter. But for now we may suppose that for every hour of 'class contact credit' an extra 30 minutes (or thereabouts) of the lecturer's total contracted hours is available for the support of open learning.

SOME QUESTONS FOR TEACHERS

Bagley and Challis finish their report on **The experience of Open Learning** thus:

> 'To sum up the complexity of the teacher's role in an open learning scheme by saying simply that it was varied and that the variety could cause some difficulties of adjustment (for example), would be to miss the important complexities of experience . . . Our conclusions, therefore, take the form of questions which should be considered by teachers . . . who are thinking of starting an open learning scheme or developing an existing one.'

The questions posed by Bagley and Challis are as follows:

GETTING INVOLVED

1. Why would you WISH (OR NOT WISH) TO BECOME INVOLVED in an open learning scheme?
   (a) How appropriate would it be for your subject and your students?
   (b) To what extent would the **personal development of your students be assisted?**
   (c) How helpful would the scheme be in maintaining or increasing your **student numbers**, including numbers on option courses?
   (d) How many **new students** might you be able to reach? (Would you be able to find the 'missed population'?)

(e) How attractive to you is the idea of a **more open and collaborative relationship** with your colleagues?

(f) To what extent would involvement **help your career**?

2. What SUPPORT FOR THE SCHEME might be forthcoming?

(a) How many colleagues would you be able to **persuade to join you**?

(b) If there is **opposition or criticism**, how would you respond to it?

(c) How much **extra work** would be needed to set the scheme up? How much would you be prepared to do?

(d) What **extra resources** would be needed (materials, accommodation, administrative and academic staff time, etc)? How likely is it that the institution will provide them?

BEING INVOLVED

3. Will the INCREASED PUBLICITY of teaching give you pleasure or problems?

(a) Will you mind being unable to answer a **student's** unexpected question?

(b) Will you welcome or resent having to **ask a colleague for help** in answering a student's question?

4. What EXTRA SKILLS will be required of you? If you have not already acquired them, how will you do so?

(a) Do you regard the setting of **assessed work** to be an exercise in student labelling or in student learning? If the former, how far will you be able to become a diagnostician and commentator? If the latter, how will you cope with the occasional need to fail a student — if, as in an open learning scheme, you may know the student individually very well?

(b) How far does the scheme rely upon high quality **learning materials**? How far can you use materials already available? Do you have the skills and time to improve or supplement existing materials or to write new ones?

5. If you have to SHARE OR RELINQUISH CONTROL over the pace and sequence of student learning, will it be a pleasure to you or a problem?

(a) Do you **prefer to run individual tutorials, group tutorials or a taught class**?

(b) How will you acquire **the skills necessary** to run individual or group tutorials, if you do not already have them?

6. How will you feel abut the REDUCED PERSONAL DISTANCE between you and individual students?

   (a) What areas of student difficulty do you consider to be the proper responsibility of a teacher? How will you respond if students attempt to introduce you to other areas?

   (b) How will you decide **when to intervene** in a student's exercise of autonomy?

   (c) To what extent do you wish to **know your students as individuals**? If the extent is only limited, how will you signal the distinction to the students?'

Delivery Systems — Accounting for Tutorial Support: Administrative Support and Fees and Recoupment

In the previous chapter we discussed the role of the teacher as tutor in support of open learning. We indicated that conditions of service may require reinterpretation in some circumstances. In the case of 'local' or 'distant' systems, for example, the teacher may need to know:

- the case load (i.e. the total number of open learning students assigned to him or her for supervision);
- the number of weeks for which the case load is to be supervised; and
- the class contact credit (i.e. the number of class contact hours per week with which the teacher is to be credited in return for undertaking the supervision of the case load).

The case load and the number of weeks are matters of fact: the class contact credit is a matter for negotiation. The college management need to know how to draw the boundaries to this negotiation and how to accommodate the result within the normal resourcing and accounting frameworks. These questions are explored in this chapter. Administrative support, fees and recoupment are also considered.

CONDITIONS OF SERVICE

The first framework within which college management have to operate is that imposed by conditions of service agreements. This topic was introduced in the last chapter but it is worth recapping here.

Conditions of service are locally negotiated within nationally agreed guidelines. There is a provision for lecturers to be 'available' for 30 hours per week for 38 weeks, i.e. 1140 hours, per year. Further, maximum class contact hours per week over a teaching year of 36 weeks are identified for each grade of staff. Currently the recommended maxima fall within the following bands:

Lecturer I	:	20-22 hours
Lecturer II	:	17-29 hours
Senior Lecturer	:	15-18 hours
Principal Lecturer	:	13-16 hours

The balance of the 30 hours 'availability' may be regarded as being taken up by:

- preparation and marking directly related to class contact: and
- other duties not directly related to class contact but with general departmental or college duties.

For a Lecturer I the balance would probably be concerned primarily with preparation and marking. Thus for a Lecturer I with 20 hours class contact we might assume 10 hours of preparation and marking. This preparation and marking factor of about 30 minutes for every class contact hour arguably attaches to all grades of staff.

OTHER CONSTRAINTS

Apart from teachers' conditions of service, college managers may need to satisfy other constraints and performance indicators imposed by, for example, LEAs, the Burnham agreement, the Pooling Committee and the Audit Commission. So far as the deployment of academic staff is concerned, the measurements relate largely to:

- the identification of college 'establishments';
- the determination of Burnham 'unit totals'; and
- the calculation of student staff ratios (SSRs).

Of these the SSR is the most important.

The procedures for arriving at college establishments, Burnham unit totals and SSRs are outlined and illustrated in, respectively, Appendices A, B and C. Underpining all these measurements are counts of:

- teacher hours and
- student hours.

So far as the SSR is concerned:

- a teacher's **class contact hours** are defined as the number of hours of face-to-face contact the teacher has (or is scheduled to have) with a student or a group of students over a period of time; and
- a student's **taught hours** are defined as the number of hours of face-to-face contact the student has (or is scheduled to have) with a teacher or teachers over a period of time.

Face-to-face contact includes lectures, seminars, tutorials, laboratories, workshops and supervised field work. Student taught hours are based on the same 'meetings' as determine lecturer class contact hours. For example, if a teacher meets a group of 20 students for two hours per week for 36 weeks, the class contact hours are two hours for 36 weeks (i.e. 72 hours) and the taught hours are two hours for 36 weeks for 20 students (i.e. 1440 hours).

Since class contact accounts for only a proportion of the teacher's 30 hours per week availability, class contact hours are a proxy for total teacher input. Similarly, taught hours are a proxy for the student activity which results from the teacher input. It is convenient to express this activity/input relationship as FTE students/FTE teachers (i.e. the SSR). The conversion of part time students and teachers to full time equivalents (FTEs) is achieved via the counts of taught hours and class contact hours respectively (see Appendix C).

The class contact hours used in the determination of a college establishment (Appendix A) are identical to those used in the SSR. There is a difference however between the count of student hours for the SSR and the count for Burnham unit totals. In the SSR the taught hours are those programmed for the enrolled students regardless of actual attendance. In the unit total calculations the student hours are, for part time students, the 'registered' hours of attendance and, for full time students, the 'hours in college' (see Appendix B).

To summarise, teacher workload measures are all based on some quantification of face-to-face meetings. However, much of open learning does not depend upon regularly scheduled meetings. Indeed any arrangement which requires a student to follow a predetermined pattern of attendance limits the student's freedom to choose place and pace and thus closes rather than opens the learning system. Much of open learning does not slot naturally into the normal resourcing measurements, but if open learning is to develop and extend significantly some arrangement is required to bring it into line with these measurements. What are the possibilities?

OPEN LEARNING AND THE SSR

Consider first the question of accounting for the 'student activity' involved in open learning as experienced in 'local' and 'distant' systems ('college' systems, like the Bradford mathematics workshop, are a special case which we will deal with later). Open learning students are by definition part time students. In the SSR calculation the 'student activity' of part time students is quantified by, first, identifying the total taught hours involved and, then, converting this count to FTE students by dividing by the typical taught hours of a full time student in that college studying at the same level in the same discipline grouping (see Appendix C). Thus the divisor varies by level of work and discipline grouping and from college to college. However, for most non-advanced work the taught hours of a full time student approximate to 25 hours for 36 weeks or 900 hours *per annum*. (We shall use this approximation in the examples which follow.)

Thus the problem of quantifying the 'student activity' in open learning turns upon identifying a notional count of taught hours. To achieve this we shall make use of the following definition:

— **Notional Weekly hours (NWH):**
An agreed estimate of the weekly taught hours which would be scheduled for a student following a conventional course providing for

the achievement of comparable aims to those of the open learning under consideration.

The phrase 'an agreed estimate' suggests that this measure will be the result of negotiation between the parties concerned — certainly teachers' representatives and college management and, probably, LEA officers. The success of the negotiation is dependent upon being able to identify an appropriate conventional analogue.

The Local Authority Associations recommended in 1980 that recoupment (i.e. the recovery of fees for out of Authority students) should be based on 'standard hours'. These standard hours were identified as (see IAPC 1980):

— 6 hours for 36 weeks (i.e. 216 hours *per annum*) for part time day students; and

— 2½ hours for 36 weeks (i.e. 90 hours *per annum*) for evening-only students.

These 'standards' may serve as the starting point for the negotiation of NWH but each open learning situation would need to be considered on its merits. For example, the appropriate analogue for many FlexiStudy programmes might be thought to be a single subject 'O' or 'A' level evening only course, in which case NWH would be agreed as 2½ hours. For a BTEC business studies module, on the other hand, NWH might be agreed as 2 hours since the nominal hours for such a module is 72 hours (i.e. 2 hours for 36 weeks).

Care needs to be taken to ensure that the analogue has 'comparable aims' and is designed for students with backgrounds similar to those of the open learning under consideration. For example, a single subject 'O' level forming part of a full time course will be timetabled usually for between 4 and 6 hours per week. The same subject in the evening is usually programmed for about 2½ hours per week. The difference may be explained in terms of the course aims and the background of the students: the full time course probably has broader aims and is intended for less mature students; the evening-only mode is more likely to be the appropriate analogue for FlexiStudy.

CALCULATING FTE STUDENTS/FTE LECTURERS

Once NWH has been agreed we can proceed to the calculation of FTE students. For example, for a case load of 20 FlexiStudy students where NWH has been agreed as 2½ hours, the FTE student count in a particular week is: (20 students x 2½ hours)/25 hours = 2 FTE students. The FTE calculation is generally made over a period longer than one week and, usually, for a teaching year of 36 weeks. Thus in the case of a student using an open learning package to pursue a BTEC module, NWH might be agreed at 2 hours and over the year the student FTE count would be (2 hours x 36 weeks)/900 hours = 0.08 FTEs. A teacher would need to supervise 12.5 such students to cover one FTE. It follows that, if the aim was to achieve an SSR of 12, a full time teacher concerned solely with providing

tutorial support for this particular form of open learning would be allocated a caseload of 150 students (i.e. 12.5 x 12).

It is important to note that the number of weeks associated with the open learning may be different from the 36 week teaching year. For example, many Open Tech packages are modules whose conventional analogue is a short course. In these circumstances it may be more convenient to use the following definition rather than NWH:

— **Student Taught Hour Equivalent (STHE):**
An agreed estimate of the TOTAL taught hours which would be scheduled for a student following a conventional course providing for the achievement of comparable aims to those of the open learning under consideration.

Thus if we examine an open learning situation where the STHE has been agreed at (say) 12 hours the FTE student count over an academic year is 12 hours/900 hours = 0.013 FTE students.

'Teacher input' is quantified in the SSR calculation by first counting the number of class contact hours involved and then converting this count to FTE teachers over the appropriate time-scale (see Appendix C). The problem in open learning is therefore to identify a notional class contact hour count. This can be achieved via the 'class contact credit' — a measure which was introduced in the last chapter and which we now more precisely define as:

— **Class Contact Credit (CCC):**
The number of class contact hours with which a teacher is credited in return for undertaking the supervision of a particular case load of open learning students for ONE WEEK.

Like NWH, CCC would result from a negotiation between the teachers' representatives, the college management and, probably, LEA officers. We will examine some of the factors which need to be taken into account in the negotiation later in this chapter.

Meanwhile, consider the case of a Lecturer I who is required to provide in total 20 class contact hours per week for 36 weeks. As part of his workload the teacher is assigned a case load of 30 FlexiStudy students for 36 weeks. Suppose that as a result of negotiation NWH is agreed as 2½ hours and CCC is agreed as 5 hours. What is the SSR over an academic year for this situation?

— 'student activity'
= (Case Load x NWH x No. of Weeks of Analogue Course)/900
= (30 x 2½ x 36)/900
= 3 FTE students

— 'teacher input'
= (CCC x No. of Weeks Case Load Assigned)/ Total Class Contact Hours
= (5 x 36)/(20 x 36)
= 0.25 FTE teachers

Therefore, the SSR = 3/0.25 = 12.

Again, suppose a Senior Lecturer with a total class contact commitment of 15 hours for 36 weeks is allocated, over an academic year, a case load of 60 students studying an Open Tech module. Suppose further that STHE is agreed as 12 hours and CCC is agreed as one hour. What is the SSR for this situation?

— 'student activity'
  = (Case Load x STHE)/900
  = (60 x 12)/900
  = 0.8 FTE students

— 'teacher input'
  – CCC x No. of Weeks Case Load Assigned/Total Class Contact Hours
  = (1 x 36)/(15 x 36)
  = 0.067 FTE teachers

Therefore, SSR = 0.8/0.067 = 12.
In general for an academic year:

$$SSR = \text{Case Load} \times \frac{NWH \times w_1}{h_1} \times \frac{h_2}{CCC \times w_2}$$

Where:

NWH = notional weekly hours;
CCC = class contact credit;
w_1 = number of weeks of the analogue course;
w_2 = number of weeks case load assigned;
h_1 = typical taught hours of a full time student at the same level and in the same discipline grouping* as the open learning; and
h_2 = total class contact commitment of the teacher

In many cases w_1 and w_2 will be equal, h_1 will approximate to 900 and h_2 to 720 hours (i.e. 20 hours for 36 weeks). In these circumstances the SSR for the open learning will approximate to:

Case Load × 4/5 × NWH/CCC

NEGOTIATING CLASS CONTACT CREDIT

Colleges are under pressure to raise SSRs. The SSR depends upon both the NWH (or STHE) and the CCC negotiated for a given case load. On the face of it higher SSRs for open learning can be achieved by maximising NWH and minimising CCC. NWH is, however, agreed as a result of establishing a credible comparison across to a conventional course with similar aims for students from a similar background. This analogue indicates the top limit on NWH. Attention

*NB Three 'discipline groupings' are currently recognised: 'Group 1' lab. or workshop based e.g. science and technology: 'Group 2' classroom based e.g. humanities and social sciences and 'Art and Design'. See DES 1984.

consequently focuses on the CCC. Teachers will wish to fix CCC as high as possible while college management will wish to agreed CCC as low as possible. What is at issue?

To begin with let us suppose that in 'student activity' terms, one open learning student is equivalent to one student on the analogue course which is scheduled to meet for x hours per week. Let us further suppose that the target enrolment for the analogue course is y (the Target Class Size). If the same number, y, of open learning students are provided with the same level of resources — x class contact credit hours, then the number of open learning students consuming one hour of class contact credit is y/x. This yields the concept of the Class Contact Equivalent which is defined as:

— **Class Contact Equivalent (CCE):**
The number of open learning students supervised in exchange for a class contact credit (CCC) of ONE hour (i.e. CCE = Case Load/CCC)

Since x = NWH; and
y = Target Class Size
CCE = y/x = Target Class Size/NWH.

We have demonstrated elsewhere (Birch & Latcham 1981) that the SSR approximates to:

ALH/ASH x Target Class Size
where ALH = typical class contact of a teacher; and
ASH = typical taught hours of a student.

At present in non-advanced further education ALH approximates to 720 hours (i.e. 20 hours x 36 weeks) and ASH approximates to 900 hours (i.e. 25 hours x 36 weeks). Hence the SSR approximates to:

4/5 x Target Class Size

and to achieve an SSR of (say) at least 12 the Target Class Size must be set at 15 or above. Then if the NWH is agreed at (say) 2½ hours the CCE must be set at 6 (i.e. one hour of class contact for every 6 students in the case load).

We can arrive at the same conclusion via a different route. In the previous section we concluded that the SSR approximates to:

Case Load x 4/5 x NWH/CCC

But by definition CCE = Case Load/CCC
So the SSR approximates to:

4/5 x CCE x NWH

Again if the SSR target is 12 and NWH is agreed at 2½, CCE must be set at 6.

Table 6 illustrates the relationship between CCE and the SSR for various values of NWH. If the CCE is set to achieve an equivalent SSR to that operating

for the analogue course, then the academic staff cost of providing tutorial support for open learning will approximate to the academic staff cost associated with the conventional course (Birch & Cuthbert 1981). In Chapter 2 we noted that 'there may be a trade-off between the investment in the production of learning materials and the investment in tutorial support': the better the learning materials the less tutorial support is required (in theory at least). If this is so, then the SSR target for open learning should be set higher than that for the conventional course. Care should be taken not to agree it too low for once it has been agreed it will probably be very difficult to renegotiate the CCE upwards.

Table 6

Inter-relationship between CCE (class contact equivalent) NWH (notional weekly hours) and SSR (student staff ratio)

CCE:	4	6	7	8	9	10	11	12	13	14	16
NWH = 1											
SSR:	3.2	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.8
NWH = 1½											
SSR:	4.8	7.2	8.4	9.6	10.8	12.0	13.2	14.4	15.6	16.8	19.2
NWH = 2											
SSR:	6.4	9.6	10.2	12.8	14.4	16.0	17.6	19.2	20.8	22.4	25.6
NWH = 2½											
SSR:	8.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0
NWH = 3											
SSR:	9.6	14.4	16.8	19.2	21.6	24.0	26.4	28.8	31.2	33.6	38.4

For an open learning programme where notional weekly hours (NWH) have been agreed as 2½ and class contact equivalent (CCE) as 8, the SSR achieved is 16 (Table 6) and for a case load of 24 students the tutor will receive 3 hours class contact credit (CCE) or 7.5 minutes per student. As explained at the beginning of this chapter a 'preparation and marking factor' of approximately 30 minutes for each class contact hour attaches to this class contact credit, so that the tutor should have about 11.25 minutes per student to cope. Whether this is adequate or not will depend upon the student and the tutor and the quality of the learning materials.

While it would be easy enough to deal with a doubling of the case load from 24 to 48 students by raising the CCC from 3 to 6 hours, difficulties would arise in providing for an increase from, say, 24 to 25 students. It would not be practicable to allow for an extra 7.5 minutes CCC on a regular basis. Faced with this problem

it may be more realistic to negotiate bands of case loads. For example, in this particular case we might produce a table similar to the following:

Case Load:	1-4	5-8	9-12	13-16	17-20	21-24
CCC (Hrs):	0.5	1.0	1.5	2.0	2.5	3.0

The exact value of the SSR varies slightly as the actual case load varies within the bands. At the bottom end of the bands the SSR will be below the target but since FTE students are involved, the overall effect on a tutor's total SSR is insignificant.

'ACTIVE' STUDENTS AND BURNHAM UNIT TOTALS

Open learning aims to give the student more freedom with regard to entry and exit points and to choice of pace in between. The effect of this bears upon the case load count. The problem is determining the point at which a student is deemed to have withdrawn. There may be a danger of allocating the expensive teacher resource to non-existent students. One solution is to ensure that the case load count is a count of **active** students where an active student is defined as one who has demonstrated his or her continuing participation in the programme. The precise definition of an active student is a matter for local agreement. However, it is probably necessary to review student progress at least once a term and to adjust teacher workloads accordingly. In this way the college can avoid entering into open-ended commitments to provide tutorial support over indefinite timescales leading to unreal case loads.

There is a general agreement that effective initial counselling will reduce wastage — it will also divert some students to conventional courses. The Barnet FlexiStudy scheme has an initial counselling component — it also has a reasonably secure student record. Over the period 1980/81 to 1982/83 the drop-out rate was on average about 50 per cent *per annum*. This may not be significantly different from conventional part time programmes. It is nevertheless indicative of the importance of a secure and up-to-date student record in order to avoid an inequitable distribution of resources and an open-ended commitment.

SSR calculations are based on **enrolled** students and scheduled class contact hours. However, the Burnham arrangements for deciding on the 'group' of a college and the 'grade' of a department requires (so far as part time students are concerned) a count of **registered** attendance (see Appendix C). The concept of an 'active' case load matches the concept of registered attendances and, coupled with notional weekly hours (NWH), provides a basis for accounting for Burnham unit totals.

SUMMARY SO FAR

'Student activity' and 'teacher input' are traditionally assessed in further

education by an analysis of the pattern of classroom activity. This convention is written into Burnham and reinforced by the conditions of service agreements and (more recently) by the SSR calculations. These rules are unlikely to be changed in the foreseeable future. If open learning is to become significant in further education some calculus is required for bringing it into the ambit of the normal measurement procedures.

This chapter had identified one way of achieving this objective. It depends upon:

- Identifying an analogue i.e. establishing a credible comparison across to a conventional course with similar aims and intended for students from similar backgrounds to the open learning under consideration.
- With the analogue as a reference point, negotiating (i) notional weekly hours (NWH) or student taught hour equivalent (STHE) and (ii) class contact credit (CCC). In agreeing both NWH and CCC the negotiators will need to bear in mind the effects of the decisions on the SSR and, hence, unit costs.
- Managing the deployment of open learning tutors on the basis of the class contact equivalent (CCE).

Given these arrangements it is possible to satisfy the need to count class contact and taught hours and so compute establishments and SSRs.

In order to avoid an inequitable distribution and a waste of resources we suggested that the case load of open learning students should be a count of 'active' students. Arguably the concept of 'active' students is not dissimilar to the concept of registered attendance. If so, a count of 'active' students together with the agreement of notional weekly hours and the identification of the number of weeks makes it possible to account for Burnham unit totals.

STAFFING THE WORKSHOP

So far this chapter has been concerned with 'local' or 'distant' open learning systems. In this section we examine the so-called 'college' systems. There are many varieties of 'college' system but perhaps the Bradford mathematics workshop exhibits those features which are of the most general application.

The Bradford Workshop:

- provides 'drop-in' facilities and supplementary support to a wide range of otherwise conventional courses; and
- through 'Tutor Teach' conducts full and part time 'O' and 'A' level courses in mathematics entirely through the medium of individualised learning materials.

Unlike 'local' or 'distant' systems where the student works primarily at home and scheduled meetings with tutors (and other students) are rare, the student in a

'college' system attends, and works primarily in, college. In the Bradford case the open learning component is done substantially in the workshop with tutors in attendance and readily available. Insofar as tutors and students are present together in the same room, the workshop constitutes a face-to-face meeting and, seemingly, there should be no difficulty in identifying class contact and taught hours. However, the students are not timetabled into the workshop but may decide for themselves when and for how long to attend. It is this degree of student autonomy and the consequent uncertainties it creates in both forecasting and monitoring student usage of the facility which presents problems.

The students using the workshop may be classified into three groups and it is convenient to examine each group in turn. They are:

- full time students enrolled on 'O' and 'A' level courses in which one subject — mathematics — is studied entirely through the 'Tutor Teach' scheme relying solely on the facilities of the workshop;
- part time students also pursuing an 'O' or 'A' level mathematics course via the 'Tutor Teach' arrangements; and
- 'drop-in' students and students enrolled on conventional courses who use the workshop to supplement their main programmes.

For the full time student the solution appears to be straightforward. By definition each full time student counts as one FTE in the SSR calculation and it seems reasonable to distribute this FTE count by reference to the number of subjects studied. Thus in the case of each student pursuing, say, three 'A' levels, one of which is mathematics, the workshop would claim credit for 1/3 FTE. Given this student FTE count it is possible to arrange for the tutorial support in the workshop on the basis of a target SSR. For example, if the target was 15 then one FTE teacher would be allocated for every 45 full time 'A' level mathematics students enrolled. Similarly in the case of a full time student studying, say, five 'O' levels, one of which is mathematics, the FTE count would be 1/5 x enrolment and one FTE teacher would be allocated for every 75 such students.

The position with regard to part time students appears not to be significantly different from that encountered in 'local' or 'distant' systems. The appropriate analogue seems to be the evening-only student, in which case the notional weekly hours are likely to be agreed at 2½ and the number of weeks at 36 whence each student approximates to (2½ x 36)/900 i.e. 0.1 FTEs. Consequently, to achieve an SSR of (say) 15, one FTE tutor would be assigned to the workshop for every 150 students enrolled.

'Drop-in' students and students using the workshop to supplement their main course constitute the biggest problem. After a few years of running the facility there may be sufficient data upon which to make a reasonable prediction of demand and to base a bid for staffing. However, credit for those students enrolled on conventional programmes and using the workshop simply to supplement these studies has already been taken by those parts of the college providing the conventional instruction. These other parts of the college may be persuaded to share some proportion of the student FTE count with the workshop

or to provide some tutorial support. Alternatively the workshop may be likened to the library and other 'central learning resources' and staffed accordingly. In the longer run logging students in and out will establish the pattern of usage and will reinforce the claim for resources.

ADMINISTRATIVE SUPPORT

Bagley and Challis (1984) note that the lack of what was considered to be an appropriate level of administrative support was what most frustrated the committed teacher and often deterred the less committed from joining in an open learning scheme. The tasks involved include the despatch of learning materials and marked assignments, the receipt and routing of assignments for marking to the relevant tutor, message handling and maintaining student records. It is argued that this set of tasks is wider than that involved with conventional students, hence the level of administrative support required by an open learning student is higher than for a conventional student. The **Barnet FlexiStudy Manual** (NEC 1980) suggests an allowance of four minutes per week for each FlexiStudy student but it concedes that this figure was arrived at by 'guesswork' (p.9). How does this 'guesswork' compare with the usual levels of clerical provision within colleges?

The level of administrative support varies widely, not only across LEAs but also, within an LEA, across colleges. We know of no nationally agreed formulae for determining the administrative and clerical staff of a college. A national survey undertaken by the DES in 1977 (and never published) revealed that the **average** FTE student to administrative and clerical staff ratio for all 'major establishments' of further education 'other than polytechnics' was 69:1 (the **average** ratio in the polytechnics was 35:1). The statistics produced by the Chartered Institute of Public Finance and Accountancy (CIPFA 1983) reveal a range from 36:1 to 173:1 in 1982/83. A ratio of 36:1 equates to just over six minutes per FTE student while, at the other extreme, a ratio of 173:1 produces just over one minute of clerical time per student per week (Table 7).

It would seem that Barnet's 'guesswork' falls well within the existing range of provision for conventional students. Administrative and clerical staff typically account for less than five per cent of the total recurrent expenditure of a college and a significant increase in the level of administrative support for open learning (as compared with conventional) students would not necessarily materially affect the resulting comparative unit costs.

FEES AND RECOUPMENT

When two or three are gathered together to discuss open learning (particularly when one of them is a local authority officer) the conversation soon turns to the vexed questions of fees and recoupment. What can be said about these issues?

Many FlexiStudy schemes are started on a 'self-funding' basis on which

Table 7

A calculation of administrative time per FlexiStudy student on various assumptions

Assume:

— Notional Weekly hours (NWH) for a FlexiStudy student = 2½

— Number of Weeks = 36

— Typical student taught hours of a full time student = 900 p.a.

Therefore: One FlexiStudy Student
= (2½ x 36)/900
= 0.1 FTE students

Weekly Hours of an FTE admin and clerical officer = 36.25 (i.e. 2175 minutes)

	FTE student/FTE admin staff ratio		
	35:1	69:1	173:1
FlexiStudy students:			
	350	690	1730
Admin staff: Minutes per week per FlexiStudy student			
	6.2	3.2	1.3

students are charged what is often described as a 'full cost' fee. This fee is more accurately described as recovering the 'marginal' cost since it is invariably calculated by reference to lecturer 'overtime' or 'part time' rates.

It has to be appreciated that there is no direct connection between costs and fees in further education. To the extent that there is any general practice, fees for home-based students typically recover only about 20-25 per cent of costs. This is easily demonstrated. At the top end of the Lecturer I scale and including national insurance and superannuation the cost is about £12,000 *per annum*. Assuming a class contact commitment of 20 hours per week for 36 weeks, the lecturer cost per class contact hour is thus about £17. Academic staff salaries account for about 60 per cent of total college expenditures. Therefore, the full (long-run average) cost of one class contact hour (including non-academic staff and other overheads) is about £28. So an evening-only course of 2½ hours per week for 36 weeks costs £2,520. To recover this cost from, say, 20 enrolled students would require a fee of £126 whereas the LEA probably charges about £30. The long-run average cost may be recovered by the fees charged in a few cases — MSC YOP (as opposed to YTS!) courses are an example — but fees are not generally related to cost.

The question is, 'Should open learning students be treated in any way differently from students on conventional courses?'. In equity the answer must be that they should be neither advantaged nor disadvantaged. This was certainly

the recommendation of the Open Tech Task Group (MSC 1982). This would mean that in the long run open learning must be established on a basis, and with a fee structure, which is directly comparable with the rest of further education. This means that, although open learning students may be required to pay in full for their learning materials, their tutorial fee is unlikely to recover the full cost of tutorial support.

An open learning scheme will in theory offer the student the opportunity of enrolling at any time and of deciding the pace of his study. In spite of this it may be advisable to allocate a design length to an open learning course, otherwise the college commitment to provide tutorial support may become open-ended. There are advantages in setting this design length at one academic year and requiring the student to enrol and pay a fee on an annual basis. This approach may provide the student with a useful target at which to aim; it may also help the college to identify wastage rates.

The present pattern of recoupment (i.e. the recovering of cost for out-of-Authority students) is as variable as the pattern of fee levels. In the case of non-poolable work some Authorities operate a policy of 'free-trade', presumably on the basis of 'what is lost on the swings is gained on the roundabouts'. Other Authorities negotiate a price per student by type of course. In an attempt to rationalise the situation the Local Authority Associations recommended in 1980 that recoupment should be based on 'standard hours' (IAPC 1980). Earlier in this chapter we suggested that these standard hours might be the first point of reference in agreeing 'notional weekly hours' (NWH). If 'notional weekly hours' did reflect the recommended standard hours then clearly they could form the basis for inter-Authority recoupment for open learning courses.

Managing the Innovation

The question of how to incorporate the tutorial support of open learning into the normal accounting procedures for academic staff was considered in some detail in the last chapter. We now move on to explore in rather less detail a number of other issues. Elsewhere (Birch & Latcham 1983) we have noted that creating greater 'flexibility' (i.e. openness) for a student may require college managers to:

- devise and operate an appropriate organization structure;
- design, develop and implement appropriate administrative systems;
- introduce an appropriate staff development programme;
- formalise arrangements within which 'negotiation' and 'guidance' may take place;
- provide appropriate accommodation, materials, equipment and other facilities either through the normal resourcing procedures or by raising funds from other sources;
- organize the timetable and the deployment of staff to match the intent;
- monitor and evaluate outcomes, procedures and mechanisms.

The possible ramifications of introducing open learning on any scale are extensive and significant. We cannot hope to identify and discuss all the possible influences upon and impacts of such an innovation, but we can hope to flag the more obvious.

THE MANAGEMENT OF CHANGE

The literature on the management of change is large and grows apace. A rigorous review of this literature is well beyond the scope of this chapter and, indeed, beyond our particular competencies. Our purposes are more modest and practical rather than academic. Is it possible to identify the major factors which ought to be taken into account by a manager contemplating an innovation? And can we outline some plan of action? What follows in this section draws heavily upon Bolam (1975) and Bolam and Pratt (1976).

The innovation process is complex but in all cases three 'systems' can be identified:

- the change agent(s) i.e. the innovator(s);
- the innovation itself i.e., in our case, the introduction of open learning; and

— the user(s) i.e., in our case, the teachers being asked to accept and work the open learning.

These systems interact and affect each other over time — before, during and after the innovation.

Perhaps the most important characteristic of the change agent system is its authority relationship with the user system because this influences the strategies which may be employed. Chin and Benne (1970) note three possibilities:

— 'power/coercive' strategies where the user responds to the legal, political, administrative or economic power held by the change agent;
— 'rational/empirical' strategies where the change agent relies on rational argument and demonstration and the enlightened self-interest of the user; and
— 'normative-re-educative' strategies where the change agent works with and alongside the user in the hope of influencing values, attitudes and skills and of identifying a common ground from which action may spring.'

These are ideal types which are rarely found in their pure form. Mixed strategies are more likely to be encountered. The best results will probably be achieved when the change agent relies more upon incentives than upon sanctions, and searches for assent rather than compliance. On the other hand, there are teachers who prefer the order and security of hierarchical and authoritarian situations and who are reluctant to assume the responsibilities involved in participative processes.

The nature of the innovation may be examined from a number of perspectives but the characteristics which seem to be most important for our purposes are those which may explain why it succeeds or fails. The fate of an innovation will be largely determined by its actual or perceived costs and benefits. These costs and benefits will be related to the innovation's demand for resources; its effects upon the working conditions, career opportunities, status and prestige of the users; and its impact upon the organisation's structures and processes and administrative procedures and mechanisms. In sum the innovation's relative advantage/disadvantage will be a function of its competitive strength for scarce resources, the rewards it offers to the users and its feasibility within a particular organizational context. A number of factors have been identified in the literature as likely to have a particular influence on the user's perceptions of the innovation. These include:

— the magnitude of the innovation in terms of both scale and degree;
— the possibility of implementing the innovation on a limited basis;
— the compatability of the innovation with existing values and practices;
— the ease with which the innovation may be adapted to meet changing needs;
— the extent to which the innovation is perceived as being difficult to understand and to use, and, a related factor, the visibility of the innovation in terms of both action and results.

The first point to note about the user system is that teachers are rarely entirely free to choose for themselves whether or not to adopt an innovation. They are constrained by their colleagues and their students and by their organizational setting. This apart, each teacher is likely to perceive the innovation differently. The extent to which an innovation will engage the attention and commitment of a teacher will be a function of how far it is congruent with his personality, attitudes, values and skills. This complexity suggests, first, that a change agent adopts a mixed strategy which can be tuned to the particular idiosyncracies of the individual teacher and, secondly, that the teachers are carefully selected.

These messages for the would be innovator can be summarised as follows:

BEFORE THE INNOVATION:

- Examine the innovation. What form does it take? Who is it aimed at? Has it been developed and piloted elsewhere? With what results? What is it aiming to change? Has it some underlying ideology? How compatable is it with existing values and practices? How extensive and radical are its consequences likely to be? How easy is it to understand and to try out? What are likely to be its actual and perceived costs and benefits?
- Diagnose your relationship with the target users. What is your track record, power base, managerial style? Do you need to change and, if so, how and in what ways?
- Analyse the characteristics of the target user system. What are its norms, values and capacity? Who are its 'gatekeepers' (i.e. those who control access to the system), formal leaders and informal influentials? How relevant and significant is the user system's wider environment? What is likely to be its response to the innovation?

INTRODUCE THE INNOVATION:

- Promote interest in and awareness of the innovation.
- Arrange for the appropriate resources to be made available — including staff selection, training and development.
- Be aware of the users' needs for status and prestige and, if necessary, devise the necessary rewards and incentives.
- Help to develop the appropriate organisational structure and administrative procedures.
- Set up the monitoring and feedback processes, evaluate, and decide whether or not to institutionalise the innovation.

STABILIZE THE INNOVATION:

- Hone and make routine the skills, procedures and mechanisms required by the innovation;
- Arrange for continuing maintenance of the innovation;

- Provide for the long-term structural integration of the innovation into the college;
- Ensure that the innovation can be adapted to meet changing needs.

We have found it convenient to distinguish between before, during and after the innovation but Theodossin (1983, 1984) has pointed out that in reality an innovation is being perpetually altered, modified and adapted.

AN EXAMPLE

Bolam and Pratt (1976) begin their examination of the management of innovation by reviewing a study by Gross et al (italics) (1971). Briefly, this study was concerned with an innovation in a school which aimed 'to encourage children to become increasingly self-motivated and responsible for their own learning . . . to make their education as self-directed as possible' (i.e. to move towards a more open learning situation). Each of the teachers was expected to provide as rich and stimulating a classroom environment as possible and to act as a catalyst, emphasising process rather than content and helping pupils to make the most of their opportunities. Prior to the innovation the teachers had taught in a traditional fashion, working through a set syllabus geared to a rigid timetable devised by the headteacher. The change agent (the director of a new Bureau of Educational Change and, therefore, high-status and powerful) introduced the innovation by a series of discussions and papers and encountered no significant resistance from the teachers. The parents and local education administrators also supported the innovation. The innovation failed. Why?

The reasons identified were:

- the teachers did not have a clear understanding of what was required of them and they did not have the necessary skills to carry out their new role;
- the necessary materials and equipment were not provided;
- the organizational arrangements within the school, such as the timetable, were incompatible with the innovation;
- no feedback mechanisms were created to correct these deficiences; and
- as a result of this unsatisfactory experience resistance to the innovation developed among the teachers.

Gross *et al* (1971) argue that the responsibility for the failure must rest largely with the change agent because he had made no attempt to provide for the predictable nor had he set up feedback mechanisms which would have informed him of the unpredictable problems as they arose. He failed to recognize the need for retraining and had not sought to provide the other supports required to maintain the active commitment of the users. Gross *et al* conclude their analysis by criticising what they see as a typical attitude of management to an innovation

which is to regard the task as ended with the decision to initiate the innovation. Bolam and Pratt (1976) find fault in the study at a number of points but agree that it remains impressive in the way it draws attention to certain critical and continuing management tasks.

MANAGING THE INTRODUCTION OF OPEN LEARNING IN FE

Bagley and Challis (1984) investigated the 'experience' of teachers, students and managers in three schemes — Flexistudy at Abraham Moss Open College, the Maths and Communications Workshop at Bradford College and open learning at Moston College of Further Education. They offer no recommendations on how open learning schemes should be tutored and managed. Instead their intention is:

> '. . . to present an analytical account of the range of experience and practice of the schemes' participants so that the reader can gain some insights into the operation of open learning schemes and the difficulties and satisfactions which they can create'

The study is well worth reading. Here we can only outline some of the management issues which Bagley and Challis raise. We do so at this point in the text in order to offer the reader the opportunity of mapping specific FE experience and practice onto the framework developed in the previous section.

Early on in their discussion Bagley and Challis state that:

> '. . . significant innovation in FE colleges is not easy. Tradition, administration systems, organizational structures and certain concepts of teachers' professionalism — all of them acted to some extent against the establishment of the open learning schemes. The more parts of the organization that that were affected and the more radical the proposed scheme then the stronger that action became.'

Some sort of external threat or stimulus lay behind all three schemes — pressure from the LEA to withdraw all 'O' and 'A' levels, for example, or the desire to widen the catchment area and increase enrolments. The response to threat or stimulus took on a character which managers and committed teachers found no difficulty in sharing — the conviction that the philosophy of open learning was 'right'. It somehow squared with FE's responsibilities to the community and with a belief that students should be treated as adults. In short, open learning was in line with the values of the user system. Bagley and Challis see this commitment to the general thrust of the innovation as:

> '. . . not only more practicable than the advancement of detailed ideas about a scheme but also more useful in carrying managers and teachers through the period of uncertainty when ideas are being formulated more precisely through experience.'

Apparently in all three colleges there was a view that if all the potential problems were considered no scheme would ever start.

The decision to initiate open learning was taken at a high level in all three colleges. In one case the principal decided to delegate the planning and development of the scheme to a department. In the second case the vice principal acted not only as the stimulus but played a leading part in establishing the scheme. In the third case the principal assigned the responsibility but nevertheless kept a protective eye on the development.

> 'Such powerful support lends drive and credibility to a scheme but raises the problem of deciding at what stage of the development so central a figure can hand over its conduct to other staff.'

The staff who take up the initial challenge of an innovation often choose themselves but they may need to be advised on tactics. Bagley and Challis note that what seemed to be significant in the characteristics of teachers playing a leading role was:

> '. . . somebody who was respected by his or her professional peers, who was not perceived as personally over ambitious and who adopted a neutral position in the arena of college politics.'

As the development proceeds, other — and less committed — staff need to be persuaded to join. Managers have the power to influence this decision both directly and indirectly. Important factors for potential recruits seemed to be:

- the status or esteem which was afforded the scheme;
- whether or not there was a cohesive and supportive group of staff which they were able to join; and
- the amount of 'hassle' involved in the new role (for example, the inadequacy of administrative support for the scheme acted as a deterrent).

At the beginning of the study the schemes were located within a department, across departments and within a matrix. The emergence of a group of staff with a shared interest in the innovation occurred more easily in the department-based scheme. Co-ordination and the development of a course team were also facilitated by this structure. By the end of the study all the colleges had decided to establish their open learning schemes as separate organizational areas.

The need to account for student hours (whether Burnham-based or SSR counts) may also argue for an open learning unit with a well defined boundary. However, accountability in this sense did not figure prominently among the concerns of any of the three schemes in their early days.

> 'Most of them took the view — and risk — that educational judgements should have priority over accounting criteria.'

The momentum of an innovation may for a time be maintained by the energy and enthusiasm of the self-selected. Later the innovation requires to be legitimised and formalised. Thus the development and agreement of appropriate resource allocation criteria became more important as the schemes progressed.

Appraising Effectiveness and Efficiency: Open Learning

Effectiveness and efficiency are major concerns of management. **Effectiveness** is about outcomes and how these compare with needs and aims. **Efficiency** is about the relationship between inputs and outcomes. Given that a 'system' is effective, attention may then turn to the question of efficiency for it makes little sense to examine the efficiency of a system which is proving to be ineffective. In short, a system is effective if it achieves objectives which are appropriate to the needs and demands of its market. It is efficient if it achieves these objectives with the optimal use of resources in the long run.

In this chapter we explore how a manager might set about appraising the effectiveness and the efficiency of open learning. We begin by setting the task into the wider context of formal systems theory. We then consider some of the messages to be found in the literature of curriculum evaluation. Finally, we examine the problem of costing education practice.

FORMAL SYSTEMS THEORY AND MANAGEMENT CONTROL

Chambers' Dictionary defines a system as 'a set of things which together form a connected whole'. What is it which identifies this collection of things as being coherent? A college might be thought of as a system. The first step in developing the idea would be to recognize that the various parts interact in a dynamic way. The next step in recognizing the college as a system will depend upon our seeing a certain unity in its processes. The unity of a college might be perceived, in part, from its aim of providing educational opportunities for a particular clientele. In other words unity comes from our attributing certain purposes to the system.

The ideas of systemic coherence and systematic purpose are inextricably linked with the idea of a system boundary. Boundaries are drawn for analytical convenience. Are employers part of the college system? The answer will vary according to the problems we are trying to solve. Drawing a boundary not only defines the extent of the system; it also defines the system's environment. In general any system may be regarded, on the one hand, as made up of several sub-systems and, on the other hand, as itself part of a wider system. Within a college academic departments and courses are examples of sub-systems, while the college itself is part of the national education system.

Suppose, for example, that we consider the purpose of a college to be to provide a set of learning opportunities on an organized curriculum. Then the

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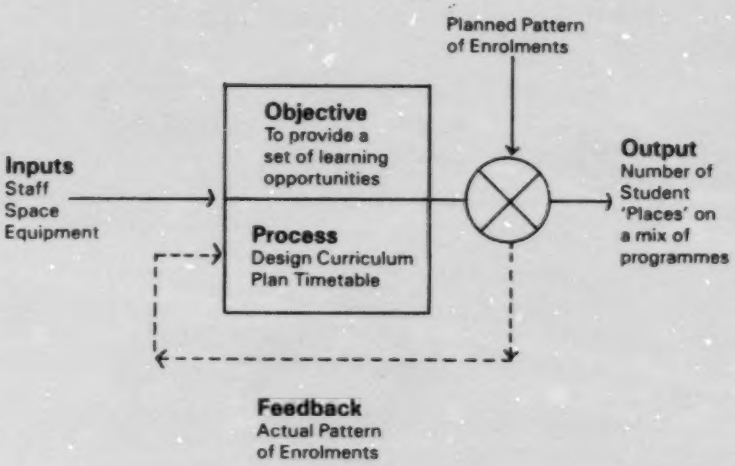
inputs to the system are the teachers, buildings and equipment. The process involved is the design of a curriculum and the planning of an instructional timetable. The output is a number of student 'places' on a mix of educational programmes. By drawing the boundary in this manner we highlight the take-up of places as a criterion of performance. Thus we are led to monitor data on enrolments in order to compare actual enrolments against planned 'places' and to feed this information back to adjust the operation of the system — so we might represent this system as in Figure 2.

Figure 2 'One' college system



What does all this mean for the manager? It suggests one way of dealing with managerial problems. The first step is to identify the problem — then and only then is it possible to decide on suitable systems parameters for handling the problem:

- Where do I draw the boundaries?
- What shall I regard as inputs and outputs?
- What sub-systems and wider systems shall I recognize?
- What are the objectives of the system *vis-à-vis* this problem?
- What performance criteria should I therefore operate?

Before getting down to the problem of appraising the effectiveness and efficiency of an open learning programme (or any other course, for that matter) it is worth extending the general discussion of formal systems theory a little further. Many of the ideas which follow are drawn from Beer (1979).

COPING WITH COMPLEXITY

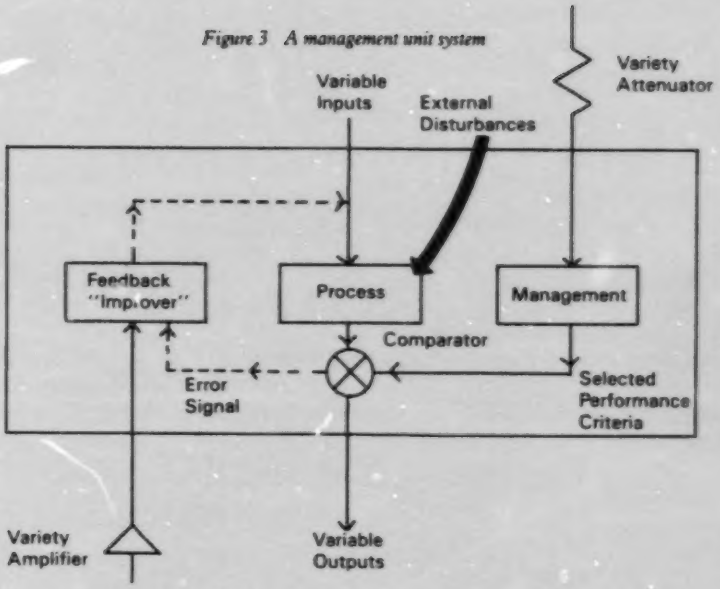
Management is about coping with complexity. A measure of this complexity is variety, where 'variety' is defined as the number of possible states of whatever it is the complexity of which we want to measure. Managers cope by constraining complexity. It is important to recognize this because every move we make to reduce complexity will block off opportunity. Once we are alert to this danger there is a choice. Given that incoming information has too much variety to be assimilated and that of necessity the variety must be reduced (i.e. 'attenuated'), we can either select those aspects of the variety generated which reinforce the simplistic 'model-in-the-head' or we can actively search for states of the system which clash with our 'model-in-the-head' and continuously adapt and improve the model (i.e. 'amplify' our response). It is more comfortable to do the former: it is better management to do the latter.

Figure 3 is an attempt to represent a management unit as a system (the 'management unit' exists to manage a particular operation — say an open learning programme). The basic elements are:

- inputs — all the variables entering the system;
- outputs — whatever variables are sent out of the system;
- process — a set of operations which relate inputs to outputs;
- comparator — a device which monitors all those output variables which are sufficiently important to hurt the system if they change significantly from some intended range of values;
- feedback — a message about the adequacy of the outputs which is fed back to the system.

We may be uncertain about the precise nature of the process and of the relationship between inputs and outputs. Thus the process is sometimes represented pictorially as a 'black box' to indicate our ignorance. Often, however, we have some insights into the process and it should perhaps be represented as a muddy box rather than a black one. It is not necessary for the manager to enter the muddy box in order to carry out his steering function. His first task is not to track down courses so much as to detect instability in the system. In this aim he may operate outside the muddy box by selecting and monitoring certain output variables against a range of values he, or the wider system, had identified as 'satisfactory'. In choosing the variables to be monitored and in identifying a satisfactory level of performance the manager is reducing ('attenuating') variety. In Figure 3 the feedback is shown going through a 'feedback improver'. This is intended to suggest that the manager should be aware of the need constantly to review, adapt and improve the measurement process — the objective being to take account of changed circumstances and environmental disturbances. This means that from time to time the focus, form and nature of the feedback will change.

Figure 3 A management unit system



Consider the problem of identifying measures of effectiveness and efficiency for a course or an open learning programme. We can make a start by recognizing that the input and output variables include the following:

INPUTS:

—	students	—	their knowledge, skills, aptitudes, attitudes, motivations and expectations at entry;
—	staff	—	academic, administrative, technical: their competences, experiences and expectations;
—	physical facilities	—	buildings, books, equipment.

OUTPUTS:

—	immediate	—	the provision of learning opportunities i.e. 'places';
—	short-run	—	students — their knowledge, skills, aptitudes, motivations and expectations at exit;
—	long-run	—	the impacts on gross national product and the cultural, social and political dimensions of society.

PERFORMANCE INDICATORS

The first problem is what to do about the long-run impacts. Some progress has been made in identifying and measuring the long-term economic effects (see the pioneering work of Schultz (1963) and Becker (1964). Some attempts have also been made to trace and assess the impacts on the socio-political and cultural aspects. A considerable further investment would be required to develop reliable methods of gathering and evaluating relevant data about *alumni* before such information became usable by college managers. It is doubtful whether the returns would be worth the cost. Even if we could identify and quantify the long-term impacts we would still be faced with unscrambling the influence of parents, peer groups, employers *et al*. In short we have to draw the boundaries somewhat tighter if we are to derive measures of effectiveness which are useful at college level.

Some progress towards this end can be made by making a distinction between learning and teaching. Learning is primarily a function of the student's own efforts. It is true that the college influences this process but so do others — parents, peer groups, employers. The outcomes attributable to the college and the college only, are the focus, relevance, size and quality of the teaching programme.

What activities are involved in teaching? They seem to be:

- to design and develop a curriculum which takes account of the needs and demands of the clients — students, parents, employers;
- to assemble and 'package' the appropriate skills and knowledge;
- to present and communicate these 'packages' via face-to-face instruction and tutorial support, the written word and other media;
- to assess, examine and provide feedback on achievement.

The observable and quantifiable outcomes of these activities are, initially, the number of student places on an organized curriculum and, subsequently, the patterns and forms of instruction established. Some indication of the students' response to this provision is given by, initially, enrolments and, subsequently, withdrawals and successes. Where the aims of a course are clearly primarily vocational, some evidence of the employers' response might be obtained by monitoring the students' employability. We know of no generally acceptable measures of quality: recourse is usually had to panels of 'experts' (for example, HMI and external examiners and moderators) exercising their 'professional judgement' and maybe, on occasions, their partiality of view.

Thus, so far as quantification is concerned, targets for enrolment may be set and 'acceptable' levels of withdrawals and failures defined. If this is done the ratios of actual to target enrolments, withdrawals and failures respectively, would be measures of effectiveness. Measures of efficiency would require the patterns of resource utilization to be isolated and related to courses and students. This would enable the derivation of efficiency measures such as the SSR and unit costs. These indicators of performance are the result of drawing the boundary at

a particular point and reducing the variety (i.e. the complexity) of the real world.

So far as open learning is concerned, computing wastage rates is dependent upon being able to identify readily whether students are 'active'. As was indicated in Chapter 3 the pressure to establish this status may be seen by some tutors as potentially harmful to their relationship with their students (Bagley & Challis 1984). Nonetheless a secure and up-to-date student record is an essential prerequisite for monitoring effectiveness.

VALIDATION

At this point it is worth emphasising that the first appraisal of the aims, feasibility and resource base of a new or revised course or programme of study should take place before it is launched. This appraisal is usually called 'validation' to distinguish it from the subsequent course 'monitoring' and course 'evaluation'. The time, energy and resources devoted to validation vary enormously. At one end of the spectrum there is the rigorous, lengthy and bureaucratic gestation of a CNAA proposal, and, at the other end of the spectrum, the process may be quick and direct and the tests which are applied (if any) few and simple. Whatever the external requirements, internal validation should:

- include an analysis of the market to prove need and demand;
- demonstrate how this need and demand will be met;
- explain how the proposal 'fits' within the existing product mix and the overall college development plans; and
- specify the resource and organisational implications.

If this sort of investment appraisal is appropriate for conventional courses, it is equally valid for open learning. Carried to its logical conclusion, the agreement of the resources required would constitute a course 'budget' against which actual resource use could be compared and the adverse variances (if any) examined.

COURSE APPRAISAL WRIT LARGER

The performance indicators so far identified arise out of drawing the boundary at a particular point. The result is perhaps a gross over simplification — difficult questions have been begged and large assumptions made. For example, how far can we be confident that the assessment process truly identifies 'success'? Education is undeniably complex. In time we might hope to extend the boundaries and refine the measures to capture rather more of this complexity but large parts of the business would still deny quantification. Meanwhile the manager's first requirement is to know whether his system is OK/not OK. In choosing to monitor this or that variable he will have at least one eye on what the wider system identifies as important. In many cases his attention will be drawn to wastage and failure rates, SSRs and unit costs (see for example Department of the Environment 1983).

The routine collection of the measurable aspects of a system will provide the manager with useful insights and alert him to potential problems. It may prompt 'discerning questions' but simply putting these questions will not necessarily bring a system back on course. Managerial control will often need to be exercised politically.

> 'Activities once decided upon will tend to perpetuate themselves: corrective actions in the case of ineffective or inefficient activities are not automatically produced by a control system but ask for a specific evaluation study: deciding upon such a study is a political act which may upset an established balance of power.' (Hofstede 1978)

A case has been made for the routine collection of data on enrolment, withdrawal and 'failure' patterns and the calculation of actual to planned ratios and wastage and pass rates. It has been argued that the comparison of these ratios against some pre-determined 'satisfactory' level of performance gives some leads as to the effectiveness of a course. This sort of formal monitoring comes close to what Becher and Maclure (1978) have described as **instrumental** evaluation. The pre-set criteria which are most used in this style of evaluation are those which describe intended student learning. Unlike a course aim, which usually refers to the intentions of a teacher, a learning objective describes what a student will be able to do at the end of the course, ideally in terms which are precise enough for the outcome to be observed and measured. BTEC and some City and Guilds courses conform to this 'behavioural objectives' model of curriculum design in which a course is successful to the extent that a pre-determined proportion of the students achieve the major learning objectives.

The logic of the instrumental style of evaluation is compelling. It focuses on what are agreed (managerially!) to be the important outcomes. There are drawbacks, however. Where the curriculum has been designed in accordance with the behavioural objectives model, it may be difficult or, in some cases, impossible to pre-specify certain kinds of student learning (in the affective domain, for example). Moreover, the approach takes no account of unintended outcomes and may miss important messages. It enables a judgement of the course to be made but it may not help towards understanding (Challis 1979). In other words, it does not get into the black (or muddy) box.

An alternative approach to course appraisal is that which Becher and Maclure (1978) have labelled as **interactive** evaluation. This approach is open ended: the problem, the issues and the criteria of success are not pre-defined, nor are the techniques of investigation pre-determined, rather they are those which seem best suited to the issues as the issues emerge. The focus is not so much upon the readily observable outcomes of the course as upon its context and processes and the experience of all the participants — teachers, students and employers. The aim is to explore so as to illuminate and, ultimately, to understand (see Challis 1979 and 1983).

There are problems with the interactive approach. Some critics argue that it lacks rigour and pays selective attention to data. There may be difficulties in interpreting the findings on occasions. Nevertheless, it acknowledges the

complexity of the real world and recognizes the political character (as opposed to the limited 'rationality') of many managerial decisions. Given its nature, interactive evaluation will occur less frequently than course monitoring — which should be a routine and regular activity. It would be possible to draw up a long list of possible purposes of course appraisal. By and large, however, these can be classified under two headings: course 'improvement' and course 'justification'. The fact that the pass rate for a course is well below the national average would be important in a context of justification but it would be usable only indirectly if the course is to be improved (Challis and Russell 1984). Insofar as it leads to understanding, the interactive style of evaluation comes into its own where the major purpose is improvement.

COSTING OPEN LEARNING

Thus far this chapter has been concerned mainly with appraising effectiveness. In this section we focus on efficiency. Efficiency is improved to the extent that output can be maintained with fewer inputs or that output can be increased with a less than proportionate increase in inputs. A complexity inherent in education makes both the measuring and the matching of inputs and outputs difficult. Answers to questions of efficiency must therefore be tentative.

Attempts to assess efficiency have been made in terms of student staff ratios (SSRs) and costs per student enrolled and per 'successful' student. SSRs for open learning were discussed in Chapter 4. In this section we are concerned with constructing a unit cost. We shall not however be drawing the definitive boundary to the problem: indeed there is no single 'right' measure of cost which is applicable to all situations and pertinent for all purposes. Our intention is altogether more modest: it is to map out a 'rough and ready' approach which gives some idea of the orders of magnitude involved. Non-acccountants who wish to pursue the compexities further might make a start with Birch and Cuthbert (1981).

Table 8 illustrates a typical college budget summarised under the major heads of expenditure. A feature of the budget is the dominance of employee and, in particular, teacher costs. This pattern is found in all sectors of education. Employee costs reflect wage and salary levels and conditions of service agreements which are largely negotiated at national level. Since education is a very labour intensive industry, these agreements strongly influence unit costs. Our search for a 'rough and ready' guide starts with teacher costs.

TEACHER COSTS

Recapping on earlier chapters — conditions of service are negotiated locally within nationally agreed guidelines. There is a provision for lecturers to be 'available' for 30 hours per week for 38 weeks per year. Within this contract maximum class contact hours per week over a teaching year of 36 weeks are

Table 8

A Typical College Budget

	Estimates £'000s	Percentage of estimates excluding debt charges
EXPENDITURE		
1. Employees		
Teachers	2976	64
Others	824	18
2. Premises (repair and maintenance of buildings heading and lighting, rent and rates etc)	362	8
3. Supplies and Services (educational suppliers, admin and domestic equipment, hired and contracted services, etc.)	353	8
4. Transport (repair and maintenance of vehicles, car allowances, petrol and oil etc.)	16	—
5. Establishment expenses (telephone, advertising, postage, printing and stationery etc.)	56	1
6. Agency services (inter-college payments)	6	—
7. Miscellaneous expenses	54	1
	4647	100
8. Debt charges	200	
	4847	

recommended for each grade of staff. We may use this pattern of class contact hours to distribute teacher salary costs to courses. Thus the teacher cost of a course would be given by:

$$\frac{xy}{z}$$

where x = the number of class contact hours received by the course;

y = the total teacher salary cost; and

z = the total class contact hours provided

i.e. y/z = the overall teacher cost per lecturer class contact hour

COMPARISONS

This approach assumes that one class contact hour is much the same as any other class contact hour in terms of its demands on the teaching force as a whole — a very large assumption!

For the purposes of illustration we shall assume that on average class contact hours are 18 hours for 36 weeks (i.e. 648 hours *per annum)* and the annual lecturer salary cost is £12,000. Hence the cost per lecturer class contact hour is approximately £18.50. At the time of writing this cost is reasonably representative.

Now consider a single subject evening-only 'A' level mathematics course which is scheduled to meet for 2½ hours per week for 36 weeks i.e. the class contact hours equal 90. The teacher cost for this course is, thus:

$$- 90 \times £18.50 = £1665$$

If 20 students enrol on this course, of whom 10 sit and 6 pass the end of year examination:

— the teacher cost per student enrolled = £83; and

— the teacher cost per 'surviving' student = £167

— the teacher cost per 'successful' student = £277

These statistics are examples of efficiency measures. If such measures are to be of much use, we require a 'standard' against which they may be compared. Such a standard might be provided by the equivalent costs for the same course last year (adjusting for changes in salary levels) or by the equivalent costs for identical courses in other colleges.

From the perspective of this text an interesting comparison is between a conventional course and an open learning programme with similar educational aims. For example, we might compare the evening-only 'A' level mathematics course with a FlexiStudy 'A' level mathematics scheme. But what is the academic staff cost of the FlexiStudy provision?

We have previously argued that a FlexiStudy tutor's workload can be fully described by:

— the caseload;

— the class contact credit: and

— the number of weeks for which the caseload is to be supervised.

The caseload and the number of weeks are matters of fact; the class contact credit is a matter for negotiation. The outcome of this negotiation will largely determine the academic staff cost. Factors that need to be taken into account were examined at some length in Chapter 4. They were concerned with the interrelationship between class contact equivalent (CCE), notional weekly hours (NWH) and the student staff ratio (SSR). The effects on the student staff ratio of negotiating various class contact equivalents for a range of notional weekly hours were summarised in Table 6.

Suppose for the FlexiStudy 'A' level mathematics scheme the class contact equivalent has been negotiated at 10 (i.e. the tutor receives a class contact credit of one hour per week for every 10 students in the caseload) — suppose further that the caseload is 20 students and the number of weeks for which the caseload is to be supervised is 36 weeks, then (assuming a teacher cost per class contact hour of £18.50 as before), the *per annum* teacher cost for this FlexiStudy scheme is: two hours class contact credit x 36 weeks x £18.50 = £1332 and the cost per student enrolled is: £1332/20 students = £67.

The unit cost advantage enjoyed by the FlexiStudy scheme arises simply out of the class contact equivalent being set at 10. If the class contact credit had been set at one hour for every eight students in the caseload, the FlexiStudy teacher cost per student enrolled would have been identical with the evening-only course. A class contact equivalent of less than eight would have resulted in a unit cost advantage for the conventional course.

Deriving a teacher cost per 'successful' student for the FlexiStudy scheme is more difficult. The critical assumption made in the evening-only case was that it was a one-year course. No such assumption can be made with the FlexiStudy scheme since the student decides the pace and the end date. Over time and with a secure student record it would be possible to identify the average time taken to complete the course and the probability of success at the examination. This information would enable the calculation of a cost per 'successful' student.

DIFFERENCES BETWEEN DEPARTMENTS

So far we have been concerned solely with teacher costs and have ignored the differences in cost per class contact hour among departments which arise out of differences in the mix of grade and scale points. As a result the information we have obtained is not significantly different from that which we could have gathered simply by comparing SSRs. It is possible to derive a somewhat more sophisticated cost which takes some account of differences in grade and salary point mix and technician, administrative and other support. Even so there is no one definitive answer to the question of cost because any answer requires subjective and arbitrary resolution of questions such as:

- What costs do we take into account? Do we consider direct academic department costs only or do we also include central services?
- If central services are included, how should they be apportioned?
- If joint outputs are produced — for example research and teaching — how should that proportion of the joint costs which belong to the teaching function be identified?
- How should those costs which are identified as belonging to the teaching functions be assigned to courses?
- What is the appropriate unit of activity? Is it the student enrolled or the student successfully completing the course or the 'value added' in terms of the students' gain on some scale of achievement between entry to, and exit from, the course?

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Figure 4 The logic of a cost per student enrolled calculation

EXPENDITURE HEADING	EXPENDITURE	COST CENTRE							
		ACADEMIC		NON-ACADEMIC					
		Dept X	Dept Y	Central admin	Buildings and premises	Grounds and playing fields	Central learning resources	Central computing facilities	Welfare services
	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s	£'000s
1. Employees[1]	78	38	32	3	1	1	1	1	1
2. Premises	8	–	–	–	8	–	–	–	–
3. Suppliers and services	10	4	3	2	–	–	1	–	–
4. Transport	2	1	1	–	–	–	–	–	–
5. Establishment	1	–	–	1	–	–	–	–	–
6. Agency	–	–	–	–	–	–	–	–	–
7. Miscellaneous[1]	1	–	–	1	–	–	–	–	–
TOTALS	100	43	36	7	9	1	2	1	1

	X £	Y £
Direct costs	43,000	36,000
Indirect costs[1]	12,600	8,400
Total costs	55,600	44,400

Note (1). Indirect costs apportioned to academic departments on the basis of FTE teachers, i.e., Dept X = 3; Dept Y = 2

	Teacher-class-contact-hours	
	Dept X	Dept Y
Course A	1,400	100
Course B	200	1,000
Course C	200	100
Total hours	1,800	1,200

	Total cost per teacher-class-contact-hour	
	X £	Y £
	30.88	37.00

	Course costs	
	X £	Y £
A	43,244	3,700
B	6,178	37,000
C	6,178	3,700
Total	55,600	44,400

	Totals £
A	46,944
B	43,178
C	9,878
	100.00

	Enrolments
A	30
B	20
C	10

	Cost per student enrolled £
A	1,565
B	2,159
C	988

The logic of one cost per student enrolled calculation is illustrated in Figure 4. This simple example is based on a college with academic departments X and Y and courses A, B and C. There are three FTE teachers in department X and two FTE teachers in department Y. Thirty students are enrolled on course A, 20 on course B and 10 on course C. Each course receives instruction from both departments. The calculation assumes that the college is concerned solely with teaching. The procedures which are then followed are as follows:

- identify the expenditures which relate to the academic and non-academic cost centres in the format recommended by CIPFA (1980);
- apportion the central services ('indirect costs') to the academic departments on the basis of FTE teachers;
- calculate for each department a cost per class contact hour and use this statistic to distribute direct and indirect departmental costs to courses;
- divide the course costs by the number of students enrolled to arrive at a unit cost.

Information on the pattern of class contact hours from departments to courses is available in most colleges so the approach illustrated in Figure 4 is feasible for conventional courses. If data on class contact credits is also recorded, the cost of open learning may also be computed. The procedures assume that administration, technician and other support costs are incurred in proportion to class contact hours. Open learning programmes may require more administrative support and cost more in terms of postage and telephone charges than conventional courses. However, given that these items form a small proportion of total recurrent expenditures, the assumption of an equal allocation of all support costs to all class contact hours (including class contact credits) is unlikely substantially to distort the final cost per student.

DEVELOPMENT COSTS

So much for the recurrent costs of providing tutorial support for an open learning programme — what about the development costs of providing the learning materials? This topic was treated in Chapter 2. As was indicated there, the potential range of *per capita* development costs is large (see Table 2). These costs will vary with the rigour and quality of the production, the shelf life of the materials and the annual student throughput. Whether account should be taken of these development costs will depend upon circumstances and upon the purposes of the costing.

SUMMARY

There are many different concepts of cost and many approaches to costing. Every costing involves judgements and we can learn as much from the judgements made in deriving the cost as we can from the cost itself. Cost information is a vital

component of any management information system and such a system should raise and help to answer questions such as:

— Are we doing well or badly?
— What problems or imperfections should we look into?
— Of the several ways of doing a job, which is the best?

It is most unlikely that cost information will completely answer such questions but it will be an important part of the total information required. This information is as important for open learning schemes as it is for conventional courses.

ONE CHECK LIST FOR APPRAISING EFFECTIVENESS AND EFFICIENCY

In the **Open Tech Task Group Report** (MSC 1982) project proposers and managers are recommended to examine the following aspects of their work:

'— . . . whether the project met its own objectives as regards costs, staffing and participation of employers and educational institutions;
— whether the provision reached its potential clients;
— whether the level of retention of students was satisfactory;
— whether client needs were adequately and equitably met;
— whether learners reach desired levels of skill and/or knowledge and how these are assessed;
— whether trainees used the skill/knowledge they had acquired in their present employment or in new employment;
— whether the project was efficiently and cost effectively managed;
— whether the project produced learning materials and/or systems and, if so, whether their capability of extension has been taken fully into account;
— what key problems had to be overcome;
— what obstacles still remain.'

Although this list was addressed to potential managers of Open Tech projects, most, if not all, of the questions are relevant for all college managers and can be applied to all courses — conventional and open learning.

Determining a college 'establishment'

N.B. (i) There is no one recommended procedure — practice varies. Below is one possible method which is representative.

(ii) The class contact credit (CCC) for the open learning component of a college can be fed directly into Step I under the appropriate 'category'.

Step 1 Analyse the teacher class contact hours by category of work:

e.g.

Category	Teacher class contact hours
II/III	4,000
IV	10,000
V	10,000
	24,000

Step 2 Distribute teacher class contact hours between grades of staff by reference to **Appendix II A Burnham Report:**

Category of work	Grade	Proportion of posts
I	PL	20%—30%
	SL/LII	70%—80%
II/III	PL	10%—25%
	SL/LII	75%—90%
IV	SL	0%— 5%
	LII	40%—65%
	LI	30%—60%
V	SL	0%— 5%
	LII	15%—25%
	LI	70%—85%

Category	Teacher class contact hours	PL	SL/ LII	SL	LII	LI
		(25%)	(75%)			
II/III	4000	1000	3000	(5%)	(65%)	(30%)
IV	10000			500	6500	3000
				(5%)	(25%)	(70%)
V	10000			500	2500	7000
	24000	1000	3000	1000	9000	10000

Step 3 Identify agreed workloads for grades of staff by reference to conditions of work agreements. For example:

Grade	Class contact hours per week
LI	20—22
LII	17—20
SL	15—18
PL	13—16

Assuming 'least favourable' workloads and a 36-week teaching year:

Grade	Workloads per annum
LI	792 hours
LII	720 hours
SL	648 hours
PL	576 hours

Step 4 Hence determine 'establishment' i.e.

PL	=	100/576 = 1.7
SL	=	(1500 + 1000)/648 = 3.9
LII	=	(1500 + 9000)/720 = 14.6
LI	=	10000/792 = 12.6

Burnham 'unit' totals

The Secretary of State for Education and Science prepares annually, as required by the Remuneration of Teachers Act 1965, a document which sets out the scales of salaries and other provisions for determining the remuneration of teachers in all establishments of further education (DES 1983). Among the other provisions is a system for allocating 'groupings' to colleges and 'gradings' to departments. The salaries of principals and vice principals are determined by college groupings and those of heads of department by department gradings. In addition (in departments with predominantly 'low level' work) there may be some effect on the number of senior lecturer posts. The system depends upon calculating 'unit totals' derived from aggregation of 'student hours' with weightings according to the 'category' of work.

The method for calculating unit totals is described in detail in Appendix II A to the DES document. Briefly it involves:

— counting the relevant student hours for each course year;

— weighting these counts according to the category of work; and

— thereby identifying the 'unit total'.

The relevant 'student hours' are those for the previous academic year. They are:

'(i) In the case of part time and block release students the **actual registered hours** spent in the college/department by each individual student shall be counted, except for students attending courses of less than one term's duration when the actual registered hours shall be increased by 10 per cent.

'(ii) In the case of full time students on courses of more than one term but less than one year's duration, the number of enrolled students on the various courses shall be counted and credit given for **95 per cent of the student hours for the particular courses as determined under sub-paragraph (v) below**.

'(iii) In the case of full time students on courses not exceeding one term's duration, the number of enrolled students on the various courses shall be counted and credit given for 110 per cent of the student hours for the particular courses as determined under sub-paragraph (v) below.

'(iv) In the case of full time students, other than those referred to in sub-paragraphs (ii) and (iii) above, the number of students enrolled on 1 November according to the year of the course being undertaken, shall be counted and credit given on the following basis:

(a) 95 per cent of the student hours for the year as determined under sub-paragraph (v) below, for each course other than a sandwich course;

(b) 100 per cent of the student hours spent in the college/department during the year, as determined under sub-paragraph (v) below, for each sandwich course, together with an addition determined by the local education authority according to the duties and responsibilities of the college staff for students during the period (if any) of the year spent in industry. The Burnham Committee recommended that this addition be of the order of 10 per cent of the student hours for the year of the course.

'(v) The student hours of a particular course shall be the time spent in the college/department as determined by the local education authority in consultation with the college principal and shall be the maximum hours of the course for the purpose of sub-paragraphs (ii) and (iii) above, and of the academic year for the purpose of sub-paragraph (iv) above. The maximum time spent in the college/department during normal hours whether in formal lectures, practical work, tutorials or individual work (e.g. in the library) shall be taken into account.'

The 'category of work' is determined by reference to the **Burnham Further Education Committee — Grading of Courses** (HMSO 1980) as subsequently amended. The categories are:

'I (i) Taught courses or research programmes, or combination of the two, leading to a higher degree.

'(ii) Courses leading to qualifications agreed to be of post-graduate standard, where a first degree or equivalent qualification in an appropriate discipline would normally be a pre-requisite for a student taking the course. (Where an extra period of time is required to bring a student up to the entry requirements of a post-graduate course, such a 'bridging course' will normally be graded Category II/III).

'II/III Courses above Ordinary National Certificate standard and leading directly to degrees of Universities of the United Kingdom or degrees of the Council for National Academic Awards; and courses with entry standards equivalent to one or two 'A' levels and which lead directly to qualifications which satisfy the academic criteria accepted for graduate status for salary purposes or study of an equivalent standard not necessarily leading to the qualifications mentioned.

'IV Study or courses above the Ordinary Level of the General Certificate of Education or comparable level leading directly to the Ordinary National Certificate, or courses or parts of courses of a comparable standard.

'V Courses other than those described above.'

Once the student hours by category of work have been identified they are weighted as follows:

I	for each 100 student hours count	1 unit
II/III	for each 300 student hours count	1 unit
IV & V	for each 600 student hours count	1 unit

Subsequently the college 'grouping' and department 'grading' is determined thus:

Unit total	Group
Up to 250	1
251 — 500	2
501 — 1000	3
1001 — 1750	4
1751 — 2750	5
2751 — 3750	6
3751 — 5000	7
5001 — 6500	8
6501 — 8500	9
8501 — 11000	10
11001 — 13500	11
over 13500	12

Unit total	Grade
76 — 140	I
141 — 250	II
251 — 400	III
401 — 600	IV
601 — 900	V
over 900	VI

The Burnham document presumes a departmental structure although it does not explain what constitutes a department. It is also clear from Appendix II A that the intention is to provide broad guidance on principles rather than precise definitions. Local Authorities seem to have been able to adapt the provisions to cases where less traditional college structures have been developed.

Where a course receives instruction from more than one department the 'timetabled' hours will be distributed between the providing departments to reflect the timetabled class contact or 'registered hours' where the total of a full time or sandwich student's timetabled hours are less than his hours 'in college', there needs to be agreement about the allocation of the balance. For example, consider the case of a college with a 'working week' of 30 hours in which a group of full time 'A' level students was based in a department which provides six hours of timetabled tuition for each of two subjects and another department provides six hours for a third subject. The students are, therefore, in timetabled contact

with teachers for 18 out of the total 30 hours. In some colleges the balance of 12 hours might be allocated to the 'home' department as recognition of its administrative and pastoral support for the students. In other cases it might be decided to divide the 'balance' between departments in proportion to their timetabled commitment. There might be some compromise between these extremes.

The Student Staff Ratio (SSR)

Four measures of a classroom interaction may be defined as follows:

Assume:
- college teaching year = 36 weeks;
- college notional week = 30 hours;
- 10 students enrolled on a full time course;
- the course meets with lecturers in class room situations for 27 hours per week; and
- on average 70 per cent of the students are entered on the register as attending these courses.

Then:

1. LECTURER CLASS CONTACT HOURS = 27 hours x 36 weeks = 972 hours
2. STUDENT TAUGHT HOURS = 27 hours x 36 weeks x 10 students **enrolled** = 9720 hours
3. STUDENT HOURS 'IN COLLEGE' = 30 hours x 36 weeks x 10 students **enrolled** = 10800 hours
4. STUDENT ATTENDED (REGISTERED) HOURS = (70 per cent of 10 students enrolled) x 9720 hours = 6804 hours.

Measures 1 and 2 form the basis of the SSR calculation as defined by the Pooling Committee: measures 3 and 4 are the basis of the Burnham Unit Total calculations although measure 4 is applied solely to part-time students (see Appendix II A Part III DES 1983).

$$\text{SSR} = \frac{\text{FTE students}}{\text{FTE staff}}$$

The SSR is calculated over an academic year as follows:

— **FTE students** =

Full time students

+

0.9 Sandwich students (Advanced)

+

0.75 Sandwich students (Non-Advanced)

+

1.1 'Short full time' students taught hours

Typical **taught hours** of a full time student

+

Part time student **taught hours**

Typical **taught hours** of a full time student

— **FTE staff** =

Full time lecturers up to and including HoDs

+

Part time teachers' **class contact** hours on poolable work

---

18 x number of weeks in academic year

+

Part time teachers' **class contact** hours on non-poolable work

---

21 x number of weeks in academic year

The calculation of an SSR at a level of aggregation below the college level is achieved by following the same rules. For example, if a full time student has 15 taught hours in department X and five taught hours in department Y, he or she counts as 0.75 FTE for department X and 0.25 FTE for department Y. Similarly if a sandwich student has 15 taught hours in department X and five taught hours in department Y, he or she counts as 0.675 (0.75 x 0.9) FTE in department X and 0.225 (0.25 x 0.9) FTE in department Y.

It is worth emphasising that the conversion of part time students to FTEs is at present achieved **not** by reference to an externally set standard but by reference to a factor derived internally. Thus the appropriate divisor for converting part time students is the typical taught hours of a full time student following a similar course (i.e. 'laboratory-based', 'classroom based' or 'art and design') at the same level ('advanced', 'non-advanced') **within the college**. In the event that there is no equivalent full time course, the college will have to determine an appropriate value. This would most likely be done by reference to the LEA or the DES.

See: Councils and Education Press (1972)
CIPFA (1980)
Environment, Department of (1983)
Pooling Committee (1972)

A Note on Open Learning and Information Technology

The future of open learning is considered by many to be closely linked with the application and exploitation of information technology (IT). The purpose of this note is to outline some of the issues.

Some information technology has been with us for years — the telephone, for example. The feature of the **new** information technology which distinguishes it from the old is the convergence of the capabilities of computers with telecommunications and the amazing rate of this development. With the advent of the **microprocessor**, reasonably powerful computers have been decreasing rapidly in both size and cost. The output from these computers can be produced in paper form: it can be transmitted with equal ease through other communication channels, such as a telephone network. Computerised systems can handle so much information that they have prompted the search for new methods of storing the output. The development of **videodisks**, containing both visual and sound information and viewable via ordinary television screens, is one result. It is already possible to track down factual information via a TV using **videotex**. Just as methods of processing data are improving daily, so too are methods of transmitting it. Video conferencing, a form of teleconferencing, but where the participants see as well as hear other participants at remote locations, is now available. Cable TV is with us and satellite communication is making an impact on the transmission of television programmes. Both of these developments are also significant for the part they can play in the transmission of other sorts of information.

This account of information technology is brutally brief but it serves to illustrate the diversity of developments. The rapid changes within this field are accompanied by a burgeoning and bewildering vocabulary. The result is confusion. There have however been some attempts to codify and define the developments in terms which are meaningful for the non-specialist. These 'dictionaries' give the layman some idea of the scope of the new information technology as well as interpreting some of the jargon and dispelling some of the confusion. Three examples are:

— Langley, D and M. Shain (1982) **Dictionary of information technology**. Macmillan Reference Books;

— Meadows, A. J., M. Gordon and A. Singleton (1982) **Dictionary of new information technology**. Kogan Page; and

— Stokes, A.V. (1982) **Concise Encyclopaedia of information technology**. Gower.

In March 1984 the Further Education Unit (FEU), the Council for Educational Technology (CET) and the Further Education Staff College (FESC) jointly sponsored a conference on **Information technology and educational development**. A full report of the conference is available from FESC publications. Some of the points made in the conference papers and the reported discussion which are relevant to the impact of IT on open learning follow.

In setting the scene for the conference, Geoffrey Hubbard, Jack Mansell and Gordon Wheeler (1984) assumed that the following technology would be available in the work place and at home:

— 'An up-to-date telephone system capable of handling digital transmissions effectively (a direct consequence of this, of interest to education and training, will be the capacity for teleconferencing);

— videodisk (and possibly recordable videodisk, but certainly including disks carrying digital as well as analogue information);

— microcomputers, the capacity of which for a given monetary outlay will roughly double every two years to the end of the decade;

— very low-cost modems (£100 in 1983 and following the same trend as microcomputers) allowing the interconnection of computers through the telephone system;

— printers at a range of prices and qualities corresponding to today's typewriters;

— one or more nationally available (e.g. local call charge) viewdata systems with Gateways and correspondingly wide access (through Packet Switching) to large databases.'

The problem, as Hubbard, Mansell and Wheeler saw it, was for the educationalist to recognize not only how these various facilities could be used in the educational process as we know it but also how, under the impact of IT, the educational process might change. They pointed out that little or no use is made of new technology in the delivery system of open learning and much work is needed to explore the potential as information technology permeates society. Their propositions were that:

> 'Improved access to content may give the curriculum designer more time to allocate to skill learning and reflection. Interactive computer based learning should allow teachers to enrich the learning process. The increased availability of learning outside the educational system can increase access to the formal system. Assessments, suitably aided by IT, can be made more conveniently available; profiling can be made easier and more authoritative; and evaluation can be regarded as a normal rather than a backbreaking activity . . . All of these situations, in one way or another, will contribute towards creating a situation in which the learner can, if he so wishes, take a large measure of control over what he learns and when and how he learns it.'

They thought there might be pressures to encourage students to bypass the conventional education system, despite the fact that '. . . the institutional system has a great deal to offer, not least to those who are embarking on the uncharted sea of controlling their own learning'. The student could in particular benefit from professional advice, guidance and counselling.

In responding to the hypothesis that the effect of IT is to make much more information more readily available and, thus, to reinforce the trend for control of education and training to pass from the professional to the client, John Mann (1984) pointed out that, according to **Social trends** (1984), only 76 per cent of households have telephones and not all households have television. Moreover, developing software is a lengthy and costly business and it is doubtful whether students would find all the materials they would require to meet their specific needs. He thought the central question was 'What activity is the user of IT engaged in and what exactly is it that he or she is learning?'.

> 'Some learning is mainly a matter for the individual student: other learning best takes place collaboratively. What is best learned alone and what is best learned corporately or collaboratively? What can only be learned in groups? . . . What is best learned at the desk or in the armchair and what can be learned only in the laboratory, workshop or studio? For the most part, even these environments provide only simulations of real life experience so an even more fundamental question is what can be learned only experientially from participation in real life problems.' (Mann 1984)

IT would nevertheless lead to some expansion in self-directed courses of study and the function of colleges and teachers would become more like those developments described by Norman Evans in **The knowledge revolution** (1981).

> 'The blackboard and the stick of chalk fall into the category of educational technology as surely as do the videodisk and the interactive computer. Each is a tool which may be used to impart knowledge or to test its retention and application. Much of the newer equipment has become so sophisticated that an appreciation of its working principles is beyond the grasp of most of its potential users — teachers as well as students. It is true that the software is becoming increasingly 'user-friendly' but much of the hardware will remain outside the classroom in the short run and maybe the medium term, because of both its complexity and its price. The rate of IT adoption will be a function of the interaction between technical developments within IT, possible areas of application, and interests of the pressure groups involved and the social, economic and other constraints. It is difficult to prophesy the outcome of this interaction.'

Referring back to the FEU/CET/FESC conference, the social and political consequences of IT were raised by John Wellens:

> 'Practically everything that is being published on IT rests on the assumption that whatever is technologically possible will happen — whether or not it is desirable socially, politically or technically . . . I can foresee for instance the creation of a new elite as well as the creation of a new race of deadbeats who have neither the ability nor the desire to contribute to society.'

This point was reinforced by Professor Norman Gower:

'We are told that whoever gets the fifth generation computer will rule the world. I don't believe that. I believe that the people who can use the fifth generation computer will rule the world.'

Much of the debate is not new. Warren Zieglar (1972) described one of the outcomes of **New schools for new towns** (a project at Rice University sponsored by Educational Facilities Laboratories Inc. which had been experimenting with new delivery systems for some years) thus:

'The shoulder carrel, for example, is a private air conditioned, electronically controlled booth, mounted on the student's shoulders and designed for use either at home or in school. The carrel would bring to the student a vast library of data, electronically retrieved and individually controlled, thus in direct competition and contrast with person-to-person teaching. The carrel weighs about 20 pounds and incorporates such instruction media as UFH-VHF TV, tapes, records, computer connection, two-way radio, telephone, slide projectors and screens (sic) . . . Those electronic education devices whose proponents and inventors foresee as implementable by the year 1990, represent a technological response to the conditions of tradition bound, non responsive, monolithic and generally irrelevant education.'

Zieglar saw two problems with these visionary proposals:

'How do we get from here to there? . . . and what shall be the content and substantive purposes of the material transmitted? . . . What view of the nature of man and his education is presupposed by this kind of arrangement?'.

A Note on Open Learning — Helping Agencies

With the current growth of interest in all forms of open learning a number of institutions and organizations are able to offer assistance towards the development of flexible learning opportunities. This note lists the agencies and describes briefly the facilities available.

The Further Education Staff College (FESC)

The Further Education Staff College collects and disseminates information about all aspects of the management and administration of further education in the public sector. The Staff College maintains an Information Bank which publishes a wide range of papers. Details of **Information Bank Papers** (IBNs), **Coombe Lodge Reports** and other publications are available from:

The Librarian
The Further Education Staff College
Coombe Lodge
Blagdon
Bristol BS18 6RG
Telephone: (0761) 62503

The Information Bank includes a number of papers particularly related to resource provision for open learning. Details of these are contained in:

IBN 1614 Open learning — an introductory reading list.

Requests for information should in the first instance be directed to the Librarian. As far as it is able the Staff College will respond to requests for advice and consultancy on any aspects of further education management including the management of open learning systems.

Council for Educational Technology (CET)

The Council for Educational Technology has published a number of books relating to open learning. Details are included in Coombe Lodge Information Bank paper IBN 1614. The Council plans to issue a series of Open Learning Guides covering all aspects relating to the development of open learning systems. The first of these is expected to be published in 1984.

CET services for open learning are provided by the CET Open Learning Unit through:

- publication of OLS News (three times a year);
- response to telephone enquiries;
- services of OTTSU (Open Tech Training and Support Unit).

The OTTSU is funded by MSC to provide staff development facilities through consultancy, advice, workshops, etc. The services are available to commissioned Open Tech projects and to those being progressed with the Open Tech Unit. Enquires should be directed to:

CET Open Learning Unit
24-27 Prudential Buildings
Above Bar Street
Southampton SO1 OFG
Telephone (0703) 36429/38368

The Open University (OU)

Open University staff have considerable experience as open learning consultants to many institutions in the UK and abroad. Their expertise includes course design, teaching and training materials development, establishment of complete open learning and/or distance teaching systems, use of new technologies, student assessment, tutoring and counselling techniques, administrative and financial systems, etc. Initial enquiries about consultancies should be directed, preferably in writing, either to the University Secretary (Mr D J Clinch) or to the Director of the Institute of Educational Technology (Professor D G Hawkridge) who will ensure that other Directors of Studies are brought into discussions as appropriate. Fees vary with the nature of the task, the seniority of staff available and assigned to it and whether or not training materials are to be provided to the institution concerned.

National Extension College (NEC)

The National Extension College was originally established for the provision of correspondence courses. Co-operation with Barnet College in the development of tutorial support for correspondence students gave rise to FlexiStudy. Recent initiatives have greatly increased the facilities available and NEC is now organized in three divisions: one deals with correspondence services, one with publishing activities, and the third NEC division is its Open Learning Unit. This unit exists to promote open learning activities of all kinds. It offers consultancy and advice on:

- open learning course design;
- supply of open learning materials;
- setting up FlexiStudy schemes;

- writing of materials;
- selection of media;
- application of new technologies in open learning;
- training tutors and counsellors for open learning.

Contact:

Janet Bollen
NEC
20 Forehill
Ely
Cambs. CB7 4AF
Telephone (0353) 61193

Materials and Resources Information Service (MARIS)

MARIS is a major project funded by the MSC Open Tech Programme and carried out by the NEC Open Learning Unit. MARIS is a computerised data base of open learning materials in areas related to the Open Tech's target users. The data to be held relates to materials which already exist and might be immediately usable or which might be adapted. The service is available to any open learning provider; it is not limited to those operating under the Open Tech Programme. Contact:

Mike Taylor or Tony MacCormack
MARIS
Bank House
1 St Mary Street
Ely,
Cambs. CB7 4ER
Telephone (0353) 611284

Open Learning Federation (OLF)

The Open Learning Federation is a 'grass-roots' organisation which brings together individuals and institutions actively involved in open learning. It is an informal network with nationally and regionally elected officers. The federation seeks to promote the extension of open learning. It provides advice and assistance in the administration of open learning systems and in development for tutors and counsellors. An important focus relates to the identification, development, exchange and evaluation of learning materials. Services offered include four newsletters a year and the organisation of regional and national workshops, conferences and materials exhibitions. Regional contacts:

North West:	Nye Rowlands (Chairman) Central Manchester College, Lower Hardman Street Manchester M3 3FP
South West:	Noel Kershaw (Secretary) Yeovil College Ilchester Road Yeovil, Somerset BA21 3BA
South:	Peter Marshall (Treasurer) Barnet College Wood Street Barnet, Herts EN5 4AZ
Midlands:	Terry Watts (Vice-Chairman) The Brockington College, Mill Lane, Enderby, Leicester LE9 5LG
North-East:	David Wilce Longlands College Douglas Street Middlesbrough TS4 2JW
Scotland:	Marian Lever SOLE Gairbraid Community Education Centre 71 Gairbraid Avenue Glasgow G20 8DE

Manpower Services Commission (MSC)

The Manpower Services Commission's Open Tech Unit (OTU) runs the Open Tech Programme which was launched in Autumn 1983 to provide pump-priming financial support to projects which develop open learning materials and delivery systems to meet identified labour market needs at technician, supervisory and management levels of skill. Between 50 and 60 major operational projects, most involving collaboration between the education sector and industry or commerce, will receive support in the financial years 1984/85 and 1985/86. Projects of particular interest to the OTU over the next year or two are those in the skill areas which will support technological innovation, supervisory and management development projects, those establishing practical training facilities for learners, and projects in the development of educational technology. In

addition the OTU will finance a small number of projects, such as MARIS and OTTSU, which support the development of the operational projects. Contact:

Open Tech Unit
Manpower Services Commission
Moorfoot
Sheffield Sl 4PQ
Telephone (0742) 704996

Further Education Unit (FEU)

The Further Education Unit is an advisory, intelligence and development body for further education. It was established to make possible a more co-ordinated and cohesive approach to curriculum development in further education. It reviews existing curricula and determines priorities; carries out studies, curriculum experiments and evaluation; and it disseminates FE curriculum information. The most likely avenues for support of open learning are through its PICKUP agency and its support for curriculum innovation.

PICKUP (Professional, Industrial and Commercial Knowledge Up-dating) is an initiative by the Department of Education and Science to stimulate the updating role of educational institutions in meeting the needs of business for post-experience education and training. FEU acts as a primary agent and runs a number of curriculum development projects, several of which involve elements of open learning. Contact for FEU projects in PICKUP:

Philip Barnard
Further Education Unit
Room 5/82
Elizabeth House
York Road
London SE1 7PH
Telephone (01) 928-9222 ext. 2522

DES contacts for PICKUP:

Jenny Cox and Lesley Roylance
Room 7/1
Department of Education and Science
Elizabeth House
York Road
London SE1 7PH
Telephone (01) 928-9222 ext. 3564

FEU also supports curriculum development projects; a modest level of support is provided for flexible learning. In support of this programme FEU has commissioned some consultancy support. Projects can be developed to meet needs of vocational and non-vocational learners across all areas of FEU activity.

Contact:

Pat Noble
Room 5/73
Further Education Unit
Elizabeth House
York Road
London SE1 7PH
Telephone (01) 928-9222 ext. 2566

Scottish Council for Educational Technology (SCET)

SCET runs the Open Learning Project which is funded by the Scottish Education Department. Its role is to promote and develop open learning in post-compulsory education in Scotland. SCET can be used as a primary reference point for open learning developments in Scotland. Its main role is to provide information, publications, training and advice and consultancy on all aspects of OL developments.

The project is running the Scottish arm of MARIS — the database for locating open learning materials at management, technical and supervisory levels. Contact:

Nigel Paine
SCET
Dowanhill
74 Victoria Crescent Road
Glasgow G12 9JN
Telephone (041) 334-9314

SCET also supplies the secretariat for the new Scottish Committee on Open Learning (SCOL). For details of this contact Peter Gartside at SCET.

Scottish Support Unit for Open Tech Projects (SCOTSU)
Contact:

Dr Gaye Manwaring
Dundee College of Education
Gardyne Road
Broughty Ferry
Dundee DD5 1NY

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